THE BUILDER

a Journal for the

ARCHITECT & CONSTRUCTOR

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Ninety-Eighth Year.

FRIDAY, AUGUST 2, 1940
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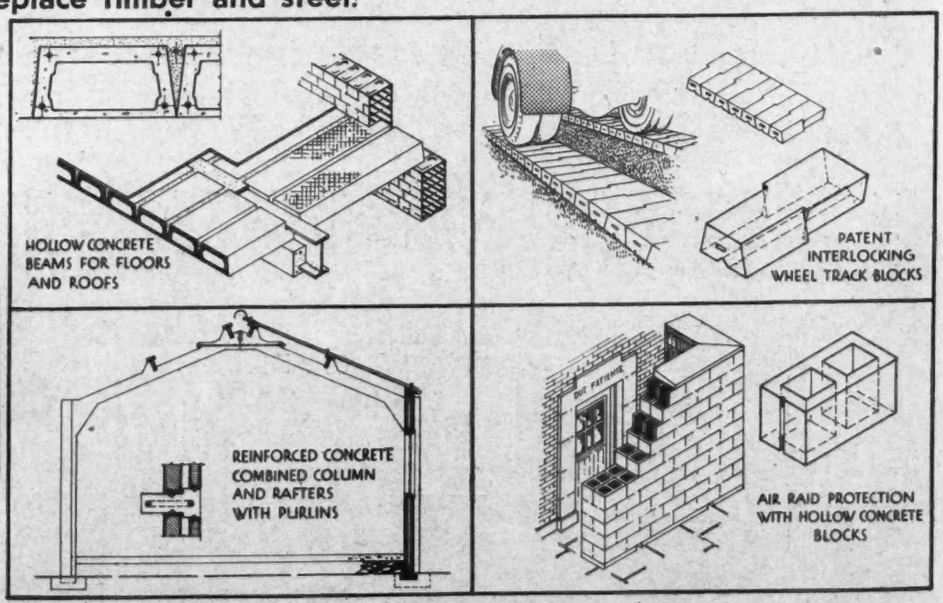
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THE BUILDER

INCORPORATING

"ARCHITECTURE" AND "THE BRITISH ARCHITECT"

VOL. CLIX AUGUST 2 1940 No. 5087

PROBLEMS OF THE ARCHITECT

THERE is no need of a reminder to most of our readers that the entire architectural profession, with the exception of a very few of its members, is passing through a very bad time. The disinclination of the authorities to do anything tangible to meet the situation suggests that there is still plenty to be done in the way of persistent propaganda on behalf of the long-suffering architectural profession.

There is no doubt that members themselves are doing their best to help themselves, and probably with greater success now that architecture is no longer a reserved occupation. Many have closed down their practices and have taken salaried jobs—sometimes at very indifferent wage rates, and often on work which represents the least interesting branches of architectural practice. Many of the younger ones have either been called up with their groups or, where still over age, have volunteered in one or other branch of the Forces, and generally in some branch unrelated to anything for which they have been trained. But at least this has thinned the ranks of unemployed architects.

Probably the most perplexing situation is that of the older practising architect, whose age precludes him from active service, and whose experience is apparently little valued in the technical departments that happen to be recruiting additional staff. In London, such men, in many cases, have seen thriving practices disappear within a few weeks, for the London practice is generally one which depends upon a sequence of a few large jobs at a time, and the eggs of such a practice are thus in a few baskets. In the country the change from peace to war is not quite so complete, in that the country practice covers a very much more general field. Numerous jobs of relatively small size, and the numerous "feed services" which country life demands, make up the stable part of the country practice, to which the occasional large-scale job makes the difference between a lean and a better year, and probably constitutes the main source of personal savings.

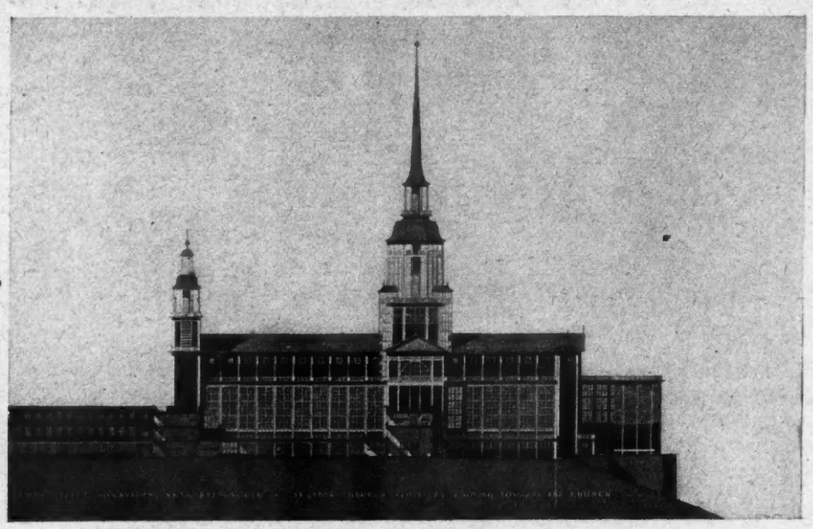
In one sense, the country architect has the advantage of his London confrère in that a part of his work goes on under most conditions, and his services, on a very small scale, are demanded wherever property changes hands and wherever families seek their means of retrenchment by moving to smaller premises. Often enough these hard-won guineas do little more than pay the expenses of the office, and it is only by a drastic cutting down of such expenses that the country architect can make these minor services contribute to his living.

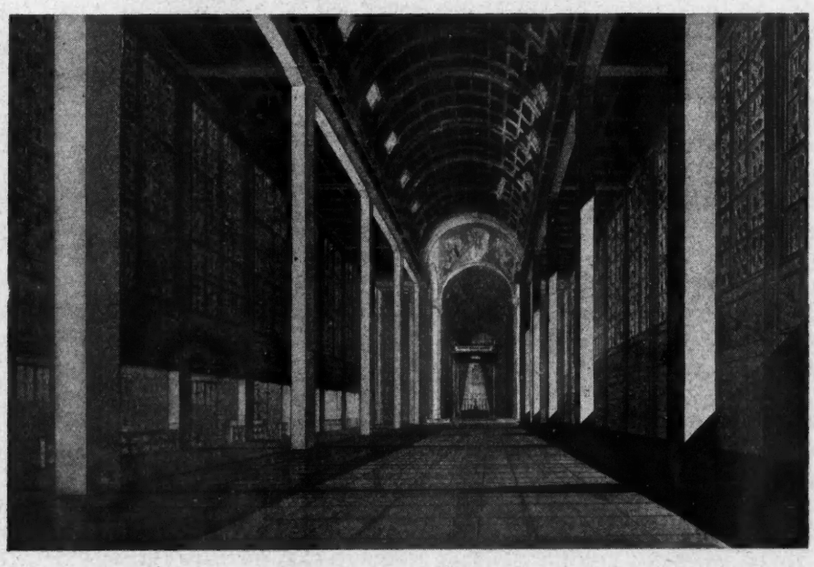
But the problem of decision faces all architects alike, and the time must come, and has already come for many, to decide whether or not to cut losses and close down for the duration of the war. When it comes to that point we are inclined to think that the Londoner will find it easier to decide than the countryman. An inactive London office serves little useful purpose to its occupier. It even involves him in unnecessary expense in travelling to and from some suburban or country home. To close down means very substantial economies in an enforced idleness. But in the country the architect in a small town is in a somewhat similar position to the family doctor. His townsfolk turn to him in many little matters to which he willingly gives attention, and by his attention he becomes the natural source of help when some really worthwhile architectural work is to be done. If he closes down on that established position, he runs a real risk of losing much which he has laboured to build up through many years, and it will be only desperate straits indeed that will induce him to adopt the drastic step of closing down. Yet even that will be the fate of many, unless some unforeseen development appears.

Looking ahead to a return of normal conditions, we think that there again the London architect will find it easier to readjust himself. London is a great centre for maintaining contacts, whereas the country district serves only its few inhabitants. We well remember that some of the young men returning from the last war brought with them some valuable introductions and even a ready-made job or two, which set them up nicely in civilian life again. That that will again happen we have no doubt, in the case of those who put up their old plates in London again, whether on the same door jamb or on some other. But the countryman will have to start anew, unless he is very fortunate, and it is for that reason alone that so many are holding on in spite of meagre profits, or sometimes even at some loss.

Anything that can be done to preserve the remaining framework of established practice should be done as thoroughly and with as little delay as possible, so that the difficult period of adjustment which must follow a world upheaval may be negotiated with a minimum of trouble.

STUDENTS' WORK AT THE LIVERPOOL SCHOOL OF ARCHITECTURE.





The designs illustrated on the right are of a Benedictine Monastery, near Bridgnorth, Salop, and are by Mr. G. T. GOALEN, of the Liverpool School of Architecture. They constitute a part of this Student's Fifth-Year Thesis work.

Also a part of a Fifth-Year Thesis work is the design shown on the left—a Pier Pavilion for Llandudno, by Mr. L. E. GREGORY.

NOTES AND NEWS

The R.I.B.A. Industrial Housing Competition.

CONSIDERABLE interest has been aroused by the Industrial Housing Competition sponsored by the R.I.B.A., of which particulars were published in our issue for July 12. Some astonishment has been expressed at the condition that the houses should "give adequate A.R.P. protection to sleepers," and some intending competitors have wondered what exactly this condition means and questioned the possibility of including adequate protection of this kind in housing in which structural economy would appear to be an essential consideration. The whole matter is discussed in an article in this issue by Mr. R. Cotterell Butler, A.R.I.B.A., who makes a number of useful suggestions for the amendment of the competition conditions. If some way could be found of putting these suggestions into effect we believe that the competition would produce much more valuable results than appear likely under the existing conditions.

"Chatter-boxes."

IT has been suggested that "Chatter-boxes" to collect fines for careless talk and rumour spreading might be placed in architectural offices, and the proceeds be given to the Architects' Benevolent Society. A label, shown by the accompanying sketch, has been designed by Mr. L. D. Morrison for pasting on to any suitable box, and is obtainable from the A.B.S., 66, Portland-place, London, W.1. It is also possible to use the box as a "swear box" to penalise not only dangerous but also strong language.

If the A.B.S. is to benefit from this scheme there must be a considerable increase in careless talk, rumour spreading and strong language. We trust it will be *sotto voce*.

Mr. E. Stanley Hall: U.S.A. Tribute.

THE Secretary of the Royal Institute of British Architects has received the following cable from Mr. Edwin Bergstrom, President of the American Institute of Architects: "On behalf of architects, United States, I send understanding sympathy to Royal Institute and its members in the passing of their President, E. Stanley Hall.—EDWIN BERGSTROM."

A.A.S.T.A.: Ballot on Affiliation to T.U.C.

IN accordance with a resolution passed by the Council of the A.A.S.T.A., a ballot of all full members of the Association has been held on the question of affiliation to the Trades Union Congress. Of the full members entitled to vote, 40 per cent. returned ballots, and the result, announced by the Association's auditors, who acted as tellers, showed 96 per cent. for affiliation and 4 per cent. against. The Association is making immediate application to the T.U.C.

Ministry of Building Proposal.

MR. J. MARCHBANK, general secretary of the National Union of Railwaymen, announced at the annual conference of Trades Councils in London on Saturday last that there were plans for a Ministry of Building under consideration. At the end of the war, he said, the rebuilding of the country would be undertaken by the Government of the day. The jerry builder and the potential creator of slums must be eliminated.

· CHATTER · BOX ·

LABEL DESIGN FOR A.B.S. "CHATTER-BOX." (See this page.)

The National Trust: Recent Gifts.

ANNOUNCEMENT of numerous valuable additions to the properties presented to the National Trust for Places of Historic Interest and Natural Beauty was made by Lord Zetland, Chairman of the Executive Committee, at the annual meeting at the Royal Society of Arts on Monday. These included Little Clarendon, Dinton, Wilts (Mrs. Engleheart and her daughter); and the Dolaucothy Estate, Pumpsaint, Carmarthen (Mr. H. Lloyd-Johnes). This estate extends to over 2,500 acres in or near the Cothi Valley. Not far from the house are the famous Pumpsaint mines, now closed. These have been worked at intervals for gold and other metals since prehistoric times.

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COMING EVENTS

Saturday, August 3.—Architectural Association.—Visit to the buildings and offices of the Roche Products, Ltd., Welwyn Garden City. 3 p.m.

Wednesday, August 7. — Architectural Association. Annual Exhibition of School Work. (The Exhibition will remain open for three weeks.)

Iron Railings.

WRITING to the Press on this subject, Professor A. E. Richardson, A.R.A., states "whether or not any particular ironwork is worthy of preservation is often a matter of debate requiring the opinion of historians, architects and artists, but as a rough guide it is probable that railings and architectural features, both of wrought- and of cast-iron, executed before 1850 are worth keeping, and that the greater part—but not all—of ironwork erected after 1850 could wisely be spared for scrap. This date conveniently separates the age of craftsmanship from the age of mass production. The Georgian Group can now offer to assist both the Minister's advisers and the local authorities and other ecclesiastical and lay bodies concerned with the patriotic duty of providing scrap metal. . . . The fact that good ironwork is only a very small proportion of the vast amount that is now challenged for its utility or beauty renders all the greater the risk that it might inadvertently get swept away."

Leicester School of Architecture: New Head.

LEICESTER Education Committee have appointed Mr. Frank Chippendale, A.R.I.B.A., head of the School of Architecture of the College of Art and Crafts.

An Architect's Estate.

MR. HUGH OWENS, of Blundellsands, left £48,079 (net personalty £39,915).

Professional Announcement.

OWING to war conditions, MR. HERBERT KENCHINGTON, F.R.I.B.A., will conduct his architectural and surveying practice, as from July 23, at Ridgewood, Nancy Downs, Oxhey, Watford, Herts. Telephone: Watford 5096.

IN 1915.

EXTRACT FROM *The Builder*, JULY 30.

IN the House of Commons on Wednesday last week Mr. Harcourt informed Sir C. Henry that 25 men were at present employed on the roof of Westminster Hall, and a varying number in the contractors' yard. Any postponement of the work would involve the serious risk of the roof falling.

* This work, involving the strengthening of the roof consequent upon ravages of the death-watch beetle, was initiated by Mr. (later Sir) Frank Baines, and comprised the incorporation of steel trusses in the roof.

CORRESPONDENCE

[While we are glad to publish letters on professional and other matters of interest to our readers, it must be understood that we do not necessarily endorse the remarks of correspondents, who will oblige us if they will express their views as briefly as possible.]

The Case for a Ministry of Building.

To the Editor of *The Builder*.

Sir,—We have been promised a Ministry of Building after the war, and Mr. J. Marchbank, General Secretary of the N.U.R., announced recently that plans for the setting up of this Ministry were under consideration. Does this foreshadow its formation for an active participation in the war effort? Let us hope so, for it is urgently required, and there is every reason for the taking of such steps at once. For some time I have been urging this as the common-sense way of dealing with the huge programme of Government war building which, commencing before the war, is still in hand to-day, and had the needs of all departments been centralised in this way a year ago there would have been far less likelihood of the maldistribution, indiscriminate use of materials in short supply and general muddle and waste in building which have been so clearly revealed by the Government Select Committee on National Expenditure. The changed aspect of war since the capitulation of France has thrown, if anything, a larger burden than ever on the building resources of the country, and many further air-raid shelters, evacuation camps, military camps, canteens, and a host of military works of a smaller and more widespread character than was previously imagined are now required, besides new works for the export industries and for munitions to follow as soon as materials and labour are available for their construction. All this requires the best organisation of which we are capable, and, in fact, there are signs that this has been recognised by the new administration; but still too many of the old haphazard ways prevail and distribution has yet too great a bias towards the favoured few at the expense of the smaller firms which form the bulk of the industry.

Into this at any moment may come the unknown quantity—damage from wholesale bombing attacks—and then it may well be a case of jobs looking for builders rather than builders looking for jobs. If under such circumstances work is to be carried out in the order of its urgency, it is obvious that it must be under central control in turn acting through district organisations competent to deal with local needs and with discretionary powers to do so, for we must anticipate damage to communications causing temporary interruption of the central control.

The present restriction on civil building is undoubtedly necessary in many areas, but a first requirement of its enforcement should be that more urgent work in the particular district is available for the building industry of the district, otherwise it is clearly detrimental. For I maintain that it is essential to keep going at the very least throughout the country nuclei of the industry capable of rapid expansion to meet local emergencies. In addition, to ensure that the industry is kept employed, there should be a definite understanding that civil building may recommence as soon as the more urgent needs have been met, within the limits of the available resources in labour and materials.

If the Government believe, and I think we may assume this, that a Ministry of Building will be necessary after the war, surely it is even more required now, and in any case the present is the time to get it going in preparation for the future if for no other reason. The essential condition of its success is that it should be recruited, not from civil servants but from the building industry itself and of persons acquainted with the customs and difficulties of the industry. The control so exercised should then be directed to get the best results from the thousands of firms comprising the industry without being irksome to them, and being mindful of their interests as well as the general interests, which should rarely prove incompatible.

Here the established Building Industries National Council should prove of inestimable value with its years of accumulated knowledge of the industry, as also would the representatives of the trade and professional bodies, who could be formed into local Building Councils to exercise the necessary district control linked to the central body by affiliation. To ensure the democratic nature of these bodies they could be elective in character with a board of directors and a small permanent paid staff.

It is likely that post-war reconstruction will have to be undertaken by the Government of the day, and the problems then facing it can to a certain extent be anticipated. In my opinion, research could be carried out and plans prepared, not necessarily in detail, for rehousing, redistribution of industry, new communications, including the Bressey report, peace-time evacuation of city and urban school-children to permanent summer camps, rural housing including sanitation and water supply, to name only a few. The R.I.B.A. research scheme is admirable in conception, but its practical value may be seriously limited without some form of official recognition or authority; nevertheless, it would form a sound basis upon which to proceed, and this is work particularly suited to architects, of whom there must still be many available who have found so far no alternative to replace depleted practices.

Nor must we forget the contribution which the building industry will be called upon to make towards economic recovery after the war, for it is probable that the building works then undertaken will be an essential factor in helping that recovery. In fact, I do not think it is too much to claim that no other industry will be able to do as much as ours in restoring more normal conditions. Are we to have a repetition of the mistakes after the last war with jerry building, ribbon development, and private speculation in land, and all their attendant evils? Only competent and authorised central control can prevent these things; let us, therefore, ask for this control on our own terms now, and prepare for it, rather than have outside control forced upon us, perhaps when it is already too late to function at its best.

To many architects who, like myself, have had the privilege of running their own practices, certain of the ideas which I am here outlining may at first seem distasteful, but I think it is vital for us to realise that we are in no sense a small and remote coterie standing aloof from the industry, but rather a part of it, and a very essential one. As such I conceive it to be our duty to plan for the industry, not in any narrow sense, but in the widest possible one, and thus to prove to the Government, and perhaps to the public also, that their apparent estimate of us as an unnecessary luxury is in fact an ill-founded one. It is difficult to imagine the conditions which will obtain after the war, but they may well be against the immediate resumption of normal practice either by reason of the lack of private finance or because the widespread nature of air damage may require the aid of every available architect. The demand might even be such that a measure of control would be necessary, with the possibility of an interim period in which we should all have to work for the Government, putting our office organisations at its disposal for the purpose.

There is no doubt in my mind that such conditions could be most satisfactorily met and dealt with by a Ministry of Building established on the lines I have indicated, to the best interests of the building industry, including the professions engaged in it and to the general benefit of the community.

George Lee Greaves, A.R.I.B.A.

45, Trinity-street,
Hanley, Stoke-on-Trent.

Daylight Illumination.

To the Editor of *The Builder*.

Sir,—The attention of the Department of Scientific and Industrial Research has been called to apparent differences in the findings of Illumination Research Technical Papers Nos. 7, 12 and 19, and it has been asked whether these differences can be reconciled, or whether No. 19 supersedes the earlier papers Nos. 7 and 12.

It may be recalled that Paper No. 7 (Penetration of Daylight and Sunlight into Buildings), which was first published in 1927, is largely concerned with the calculation of daylight factors, and a "minimum tolerable" value of daylight factor of 0.2 per cent. is proposed. Substantially the Illumination Research Committee in publishing this paper endorsed the views expressed by one man with long experience of illumination problems. It is made clear that a higher standard is required for certain purposes; for instance, a daylight factor of 0.5 per cent. is mentioned as that on the worst desk of approved elementary school classrooms.

Paper No. 12 (The Daylight Illumination Required in Offices), issued in 1931, gives the views of a "jury" composed of architects, illuminating engineers, an accommodation officer of H.M.O.W., and an engineer, on the minimum tolerable daylight factor for a number of rooms of various shapes and sizes; the view of the occupier of each room was also obtained. The value reached was substantially 0.2 per cent. These rooms were used for ordinary writing.

Some misapprehension has arisen from a wrongly worded sentence in this paper. The "jury," of which the author of the paper was not a member, were investigating minimum tolerable values of daylight, and did not express the view that natural lighting in a clerical office exceeds 0.2 per cent. It is noteworthy that such a view was expressly rejected by the International Commission on Illumination when

it discussed problems of interior illumination in the same year.

The investigation of 1937 described in Paper No. 19 (Daylight Illumination Necessary for Clerical Work) differed from the other two in that the workers themselves in the normal course of their duties provided—perhaps unconsciously—the data on which the conclusions were based. The value reached—5 foot-candles—corresponds to a daylight factor of 1.0 per cent. on a dull day when the outside illumination is 500 ft. candles. The work concerned was typewriting, and this word could with advantage have replaced clerical work in the title. In view of references in the paper to artificial illumination it may be well to state definitely that the conclusions reached in the investigation related to daylight.

It is probably fair to say that in the first two investigations the emphasis has tended to be on illumination that is inadequate for clerical work and other purposes that may be classified as stationary, and in the third on illumination needed to carry through typewriting and other rapid operations efficiently. As might be expected, the personal factors, as revealed in the second and third papers, are rather large, but there is no reason to suppose that the third misrepresents the standard of illumination that should be secured for typewriting and similar work. Such operations necessitate a higher minimum of illumination than comparatively slow processes, such as handwriting. It is not surprising that the standard of illumination generally expected—and now easily obtained—has risen. The position was summarised concisely in the Chairman's Prefatory Note to the last of these papers—"Some of the minimum standards of illumination suggested in the past are much too low." This, of course, does not imply that there are no conditions for which a lower standard of illumination than is necessary for efficient typewriting is adequate. Much more work, preferably on a scale large in comparison with the investigations made hitherto, is needed before we are entitled to suppose that our knowledge of these problems is sufficient for practical needs.

T. SMITH,
Superintendent, Light Department,
National Physical Laboratory.
Teddington, Middlesex.

Architects' and Surveyors' Panel.

TO THE EDITOR OF *The Builder*.

SIR,—May I, through your columns, say a few words on the work of the Panel of Architects and Surveyors which serves the Federation of Tenants' and Residents' Associations, and ask for its active support by your readers.

War has not solved the problem of tenants; if anything it has increased them. A.R.P., evacuation, the housing shortage, neglect of repairs under the guise of "war economy"—these are some of the many new difficulties which the tenant has to face.

In the past, architects and surveyors on the Panel have by their professional advice helped tenants to achieve considerable successes in their struggle for better living conditions; sometimes spectacular, as in the case of Mrs. Borders, but always to the advantage of tenants, who are otherwise unable to remedy their legitimate grievances because they cannot afford professional advice.

The demand for the services of the Panel is increasing, particularly in the field of A.R.P., and I should like to appeal to all your readers to consider whether they can help in this work. There are rarely any fees to draw, but there is the satisfaction of knowing that you are helping to make your profession a service to the community.

The work consists of surveys of houses, blocks of flats and air-raid shelters, technical advice to organisations and individuals, and technical help generally.

There will be an informal meeting of the Panel to discuss its work, with particular reference to A.R.P., at the Housing Centre, 13, Suffolk-street, Haymarket, S.W.1, at 6.30 p.m., on Wednesday, August 7. All who would like to join in this good work will be cordially welcomed.

I should be glad to hear from anyone wishing to join the Panel but unable to attend this meeting, and particularly from architects and surveyors in the provinces.

C. BORNAT,
Secretary, Architects' and Surveyors' Panel,
Federation of Tenants' and Residents' Associations.
69, Chancery-lane, W.C.1.

INDUSTRIAL HOUSING:

R.I.B.A. COMPETITION: SOME CRITICISMS AND SUGGESTIONS

By R. Cotterell Butler, A.R.I.B.A.

THE problem of housing the vast numbers of additional industrial workers who have been recruited for the war effort, and of providing accommodation to meet the needs of the inevitable war-time re-orientation of industrial centres, is of particular interest at this time.

Further, methods whereby the requirements of the national war effort may be met most expediently, and at the same time a policy of long-term national economy preserved by ensuring that wherever possible the post-war value of war-time undertakings shall be as high as practicable, should be the particular concern of all architects and planners.

The R.I.B.A. is therefore to be congratulated on its wisdom and foresight in sponsoring a competition directly intended to stimulate interest in the problem of meeting both war-time and post-war needs.

Obviously, it is of vital interest to the architectural profession as a whole that any official move by its representative body should be made only after the most careful and painstaking consideration, and a most lively appreciation of present and anticipated conditions in the building industry. Therefore, one cannot feel other than bewilderment at certain clauses in the Committee's conditions, as published in the R.I.B.A. Journal for July 15.

In outlining their general justification for encouraging the undertaking of "*permanent*" industrial housing at a time when the whole nation's efforts are directed towards the prosecution of the war, the Committee very rightly emphasise the need for a programme which shall meet the fundamental requirements of the immediate situation, inasmuch as the project must be "*economical, swift, and does not interfere with pressing war activity.*" One is all the more amazed, therefore, on reading further, to find the following statement:—

"(c) *The houses, without undue cost, give adequate A.R.P. protection to sleepers.*"

On first reading this, one might conclude that for the word "sleepers" one should read occupants, and that the Committee had in mind the provision of adequate shelter accommodation within each individual house, or block of houses. But under "Some Observations by the Committee" the following statements occur, which leave one no alternative but to suppose that the Committee intend to suggest that **the structural strength of accommodation intended to house sleeping industrial operatives should be such that adequate A.R.P. protection is afforded:**

"*There appear to be many possibilities of designing a building that complies with the foregoing conditions. As an example . . . . .*

"*The structure would be of 13½ in. external brick walls, with slab roof, suitable to act as first floor, and give resistance to light incendiary bombs. Windows to be provided with shutters, or other blastproof protection.*"

Now, however laudable the Committee's intention may be in suggesting such a standard of construction, and granted that they very reasonably suggest that they will be "*prepared to consider any variation from the stated requirements, provided it complies with the spirit and objects of the Competition,*" to make such a statement as that in clause "(c)," and to follow this up by the implications outlined under "Some Observations by the Committee" leaves one no alternative but to suppose that in the opinion of the Committee it is both reasonable and practicable to construct emergency

housing accommodation, structurally to meet the requirements of the Code, for adequate blastproof protection.

It is conceivably possible to construe the phrase "adequate A.R.P. protection" in a variety of ways. Adequate is, of course, a purely relative word, and technical opinions with regard to what is or is not adequate naturally vary; but it is more or less universally recognised in this country that the term adequate shall for general practicable purposes be taken to mean those standards of protection laid down in the Government's Code of Practice, under the Civil Defence Bill, 1939. On this basis the level of lateral protection provided in accordance with the Committee's suggestions would have to be either:—

(*a*) Mild steel, not less than 1½ in. thick; or
(*b*) Solid brickwork or masonry not less than 13½ in. thick; or
(*c*) Reinforced concrete not less than 12 in. thick; or
(*d*) Mass concrete not less than 15 in. thick.

It is apparently the Committee's intention to suggest that sleeping industrial workers should be accommodated in rooms themselves equal in strength to standard shelter accommodation. In maintaining that this is a most unreasonable suggestion, and one which cannot be justified after due examination of the practical and economic factors of the position to-day, it should first be considered whether this is necessary at all.

Broadly speaking, there can be no doubt that to sleep within lateral protection of a high order would be most beneficial psychologically under present conditions. But in order to be consistent, to render shuttered openings of equal efficiency to walls would mean nothing less than sleeping under shelter conditions.

Quite apart from practicability or economy (supposing a reasonable standard of efficiency in the air-raid warning arrangements operating), the time taken to move from one's bedroom to a shelter within the building would be negligible.

Now industrial operatives in vulnerable areas may conceivably lose some sleep through having to get up and go to shelter on warning of a raid, and by enabling them to sleep under shelter standards of protection some sleep might be gained which might otherwise be lost, but how much would this be, and how much sleep would be lost through going to bed knowing that one would receive no warning of raids, since, if warnings were given, the advantage of saving the workers from disturbance would be lost?

Quite apart from these considerations, **under present conditions the provision of housing accommodation giving adequate A.R.P. protection to sleeping persons is certain to be quite impracticable.**

Speed of erection and economy are an essential part of all war undertakings, and both these factors are largely controlled by the suitability of the structural system for large-scale production and the efficiency of each essential element in the structure.

Now it must be obvious to anyone who has studied the developments which have been made in building technique to meet the requirements of the war, that only by intelligent systematisation of building operations, and by a careful standardisation of component parts, can favourable labour or material costs be obtained.

Consider for a moment the magnitude of the task of building industrial housing accommodation the structural walls of which are to be of 13½ in. brickwork, 15 in. of mass concrete, or 12 in. of reinforced concrete (1½ in. steel plate is obviously out of the running completely). Compare the labour and material costs of such a project with that of light structures of the type which have received wide consideration during the last six months.

True, the cost of providing shelter accommodation must be added, but in how many instances is this already provided for at reasonable distances in conjunction with either municipal or industrial undertakings? In any case, the area per person required for shelter accommodation compared with his sleeping requirements is so vastly dissimilar that it is almost beyond economic comparison.

Again, unless the sleeping accommodation is to be in every respect a "dormitory shelter," where are the materials required for shuttering windows to come from? Obviously, to afford protection of an order equal to walls, either timber or steel in immense quantities will be required, quantities which one can venture to suggest will be vastly beyond the amounts which the Government would be either willing or able to sanction.

Moreover, the technical problem of shuttering and unshuttering windows is almost impracticable in itself, if anything like an equivalent standard of protection is to be used.

Destructive criticism alone is of little value, and the following modifications of the Committee's suggestions are intended not only as proposals for making the project more practicable, but to draw attention to the immense possibilities for developing and improving the technique of building.

The stipulation that the houses should give A.R.P. protection to sleepers should be withdrawn altogether. Alternative means of providing blastproof protection should be asked for to apply to cases

(*a*) Where shelter for the operatives during the day and away from work could be combined;
(*b*) Where shelter accommodation independent of the factory is necessary. (Suggestions could be made in this connection for shelter units formed as part of the house structures, or as entirely separate units.)

The Committee's emphasis on the need for good planning both in the design of individual dwellings and layout of schemes as a whole should be backed up by **equal emphasis on structural considerations** which arise in connection with war-time building generally.

By eliminating the suggestion that A.R.P. protection should be provided by the structures themselves, added stimulus could be given to designers prepared to devote their attention to a study of **improving methods of building organisation,** both to provide buildings suitable for post-war use and to ensure their being constructed sufficiently economically and rapidly to meet war-time demands.

Stress should be laid upon and every encouragement given to the **development of constructional systems,** alternative materials, and, in general, means of adapting building technique to war-time needs.

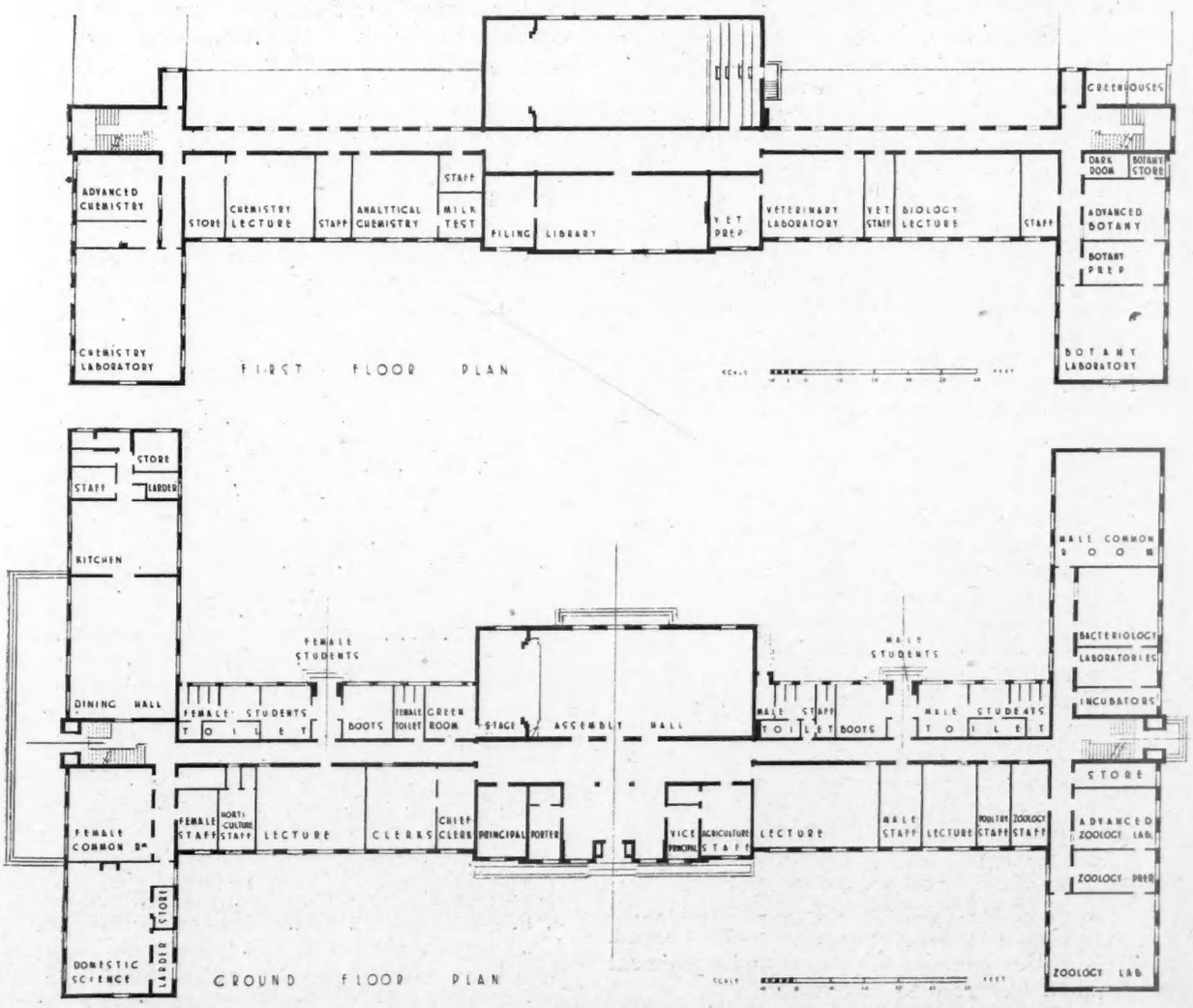
A close study of labour and cost factors should be encouraged and everything possible be done to further co-operation between architect competitors and builders and quantity surveyors in the preparation of schemes.

While the Committee's insistence on the post-war value of the programme is, it is agreed, extremely wise, and ideally in the interests of the competition as a whole, it is regretted that some parallel premium, or part of the main premium, should not be available to encourage a careful consideration of more temporary forms of construction in addition to the main project. Types of building suitable for re-erection after the War, in a completely new form, would not only be a valuable asset to present facilities, but would stimulate fresh thought on building technique, which would have a profound effect upon future architectural practice.

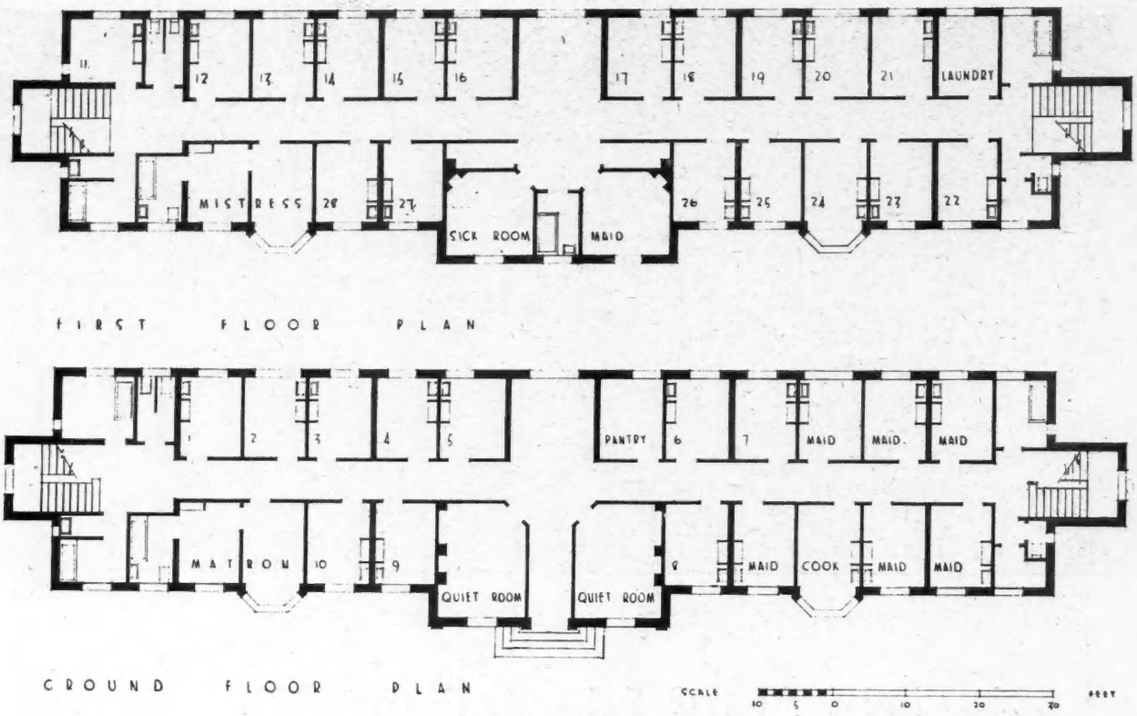
GENERAL VIEW OF MAIN BUILDING.

ESSEX INSTITUTE OF AGRICULTURE

MR. J. STUART, F.R.I.B.A., COUNTY ARCHITECT.



PLANS OF MAIN BUILDING.



PLANS OF HOSTEL.

THE ESSEX INSTITUTE OF AGRICULTURE.

The Essex Institute of Agriculture, before the erection of the building which is now illustrated, had quarters in an adapted building. The new building has the advantage of being in the centre of an extensive farm, consequently all facilities for practical work are at hand.

PLANNING.—The new building consists of the central building, which is the Institute proper, supplemented by two hostels and a poultry station, dairy farm, instructional dairy and ancillary buildings, such as potting sheds, fruit packing sheds, greenhouses and cottages for gardeners and other workers. The building is not only designed for teaching purposes but also for research work, which is undertaken by the staff on behalf of the farmers of the surrounding counties.

The main feature of the central building is the entrance block with the entrance hall surrounded by the rooms for the principal members of the staff, and the adjoining assembly hall.

CONSTRUCTION.—The building is constructed chiefly of Essex bricks with a small amount of Clipsham stone to the main entrance. It is intended to lay out the ground immediately surrounding the College buildings with various specimen shrubs and selected flowers.

The hostels are grouped near the main building for simplicity of control and access. These buildings consist solely of bedrooms and bathrooms, the dining and common rooms being in the main Institute building.

The poultry station, a short distance from the main Institute buildings, is planned round three sides of a quadrangle and is constructed in a simple manner of fletton bricks colour washed. This station contains the rooms and equipment required for breeding and research.

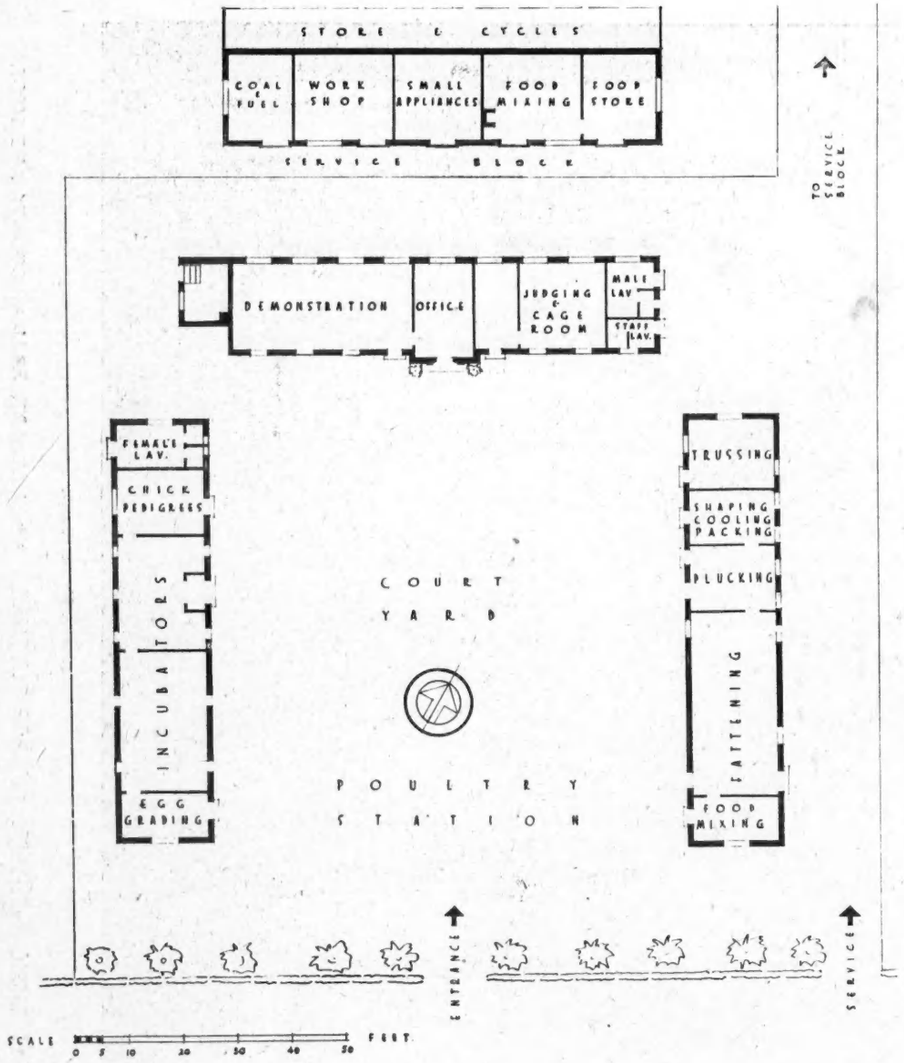
An instructional dairy has been formed in another part of the farm estate by converting an existing building. This instructional dairy is fully equipped for teaching and research purposes. The dairy farm, formerly known as Dawes Farm, consists of a shippon for forty cows with annexe for milk sterilizing and distribution, bull pens and manure shed, all in new buildings.

The building contractors were Messrs. H. Smith & Son, of Clacton-on-Sea. Sub-contractors and suppliers were: Lift, Aldous & Campbell, Ltd.; milk plant, Aluminium Plant & Vessel Co., Ltd.; cowhouse equipment, Beatty Bros., Ltd., and Salopian Cattle Bowl Co., Ltd.; kitchen equipment, Benham & Sons, Ltd.; sanitary fittings, John Bolding & Sons, Ltd., and Geo. Farmiloe, Ltd.; laboratory fittings, Baird & Tatlock (London), Ltd.; facing bricks, W. H. Collier & Co.; metal windows, Colchester Steel Construction Co., Ltd., and Crittall Manufacturing Co., Ltd.; cedar roofs, W. H. Colt (London), Ltd.; floor and wall tiling, Carter & Co., and Surrey Tile Co., Ltd.; plumbing, J. Coward; fire fighting equipment, S. Dixon & Son, Ltd.; steelwork, Dorman Long & Co., Ltd.; heating, Fretwell Heating Co.; r.c. floors and flats, Frazzi, Ltd.; electrical installation, J. Cripper, Ltd.; ironmongery and metalwork, James Gibbons, Ltd.; electric clocks, Gent & Co., Ltd.; fireplaces, E. L. Hunt, Ltd., and Geo. Wright (London), Ltd.; ventilation, Haywards, Ltd.; electrical fittings, Harcourts, Ltd., Troughton & Young, Ltd., Wardle Engineering Co., Ltd., and Davis Bros.; refrigeration, J. & E. Hall, Ltd.; "glazement," Hoyle, Robson & Barnet; paint, Jenson & Nicholson, Ltd.; reinforcement to foundations, Johnson's Reinforced Concrete Co., Ltd.; fibrous plaster, J. B. Johnson & Co., Ltd.; stone paving, Neolite, Ltd.; asphalt, Permanite, Ltd.; stonework, Saunders, Bros. wood blocks, Stevens & Adams, Ltd., and curtains and blinds, Wenley, Ltd., and H. Joscelyne.

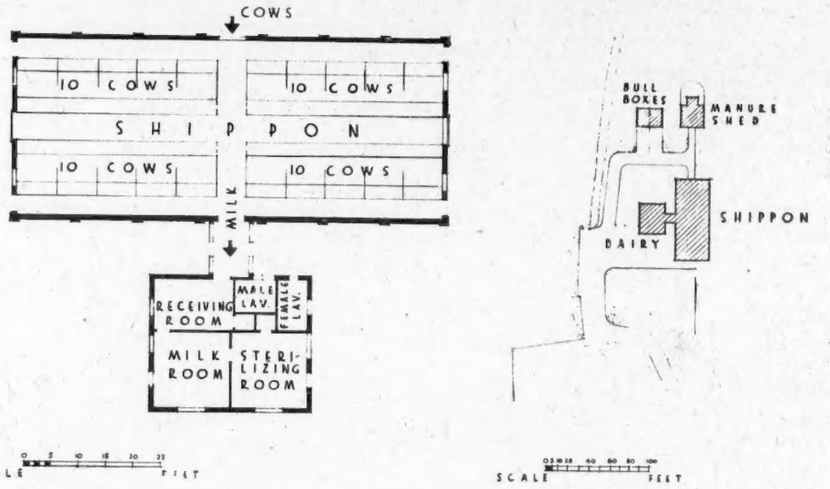
ENTRANCE TO MAIN BUILDING.

THE ASSEMBLY HALL.

THE ESSEX INSTITUTE OF AGRICULTURE. MR. J. STUART, F.R.I.B.A., COUNTY ARCHITECT.



PLAN OF POULTRY STATION AND SERVICE BLOCK.



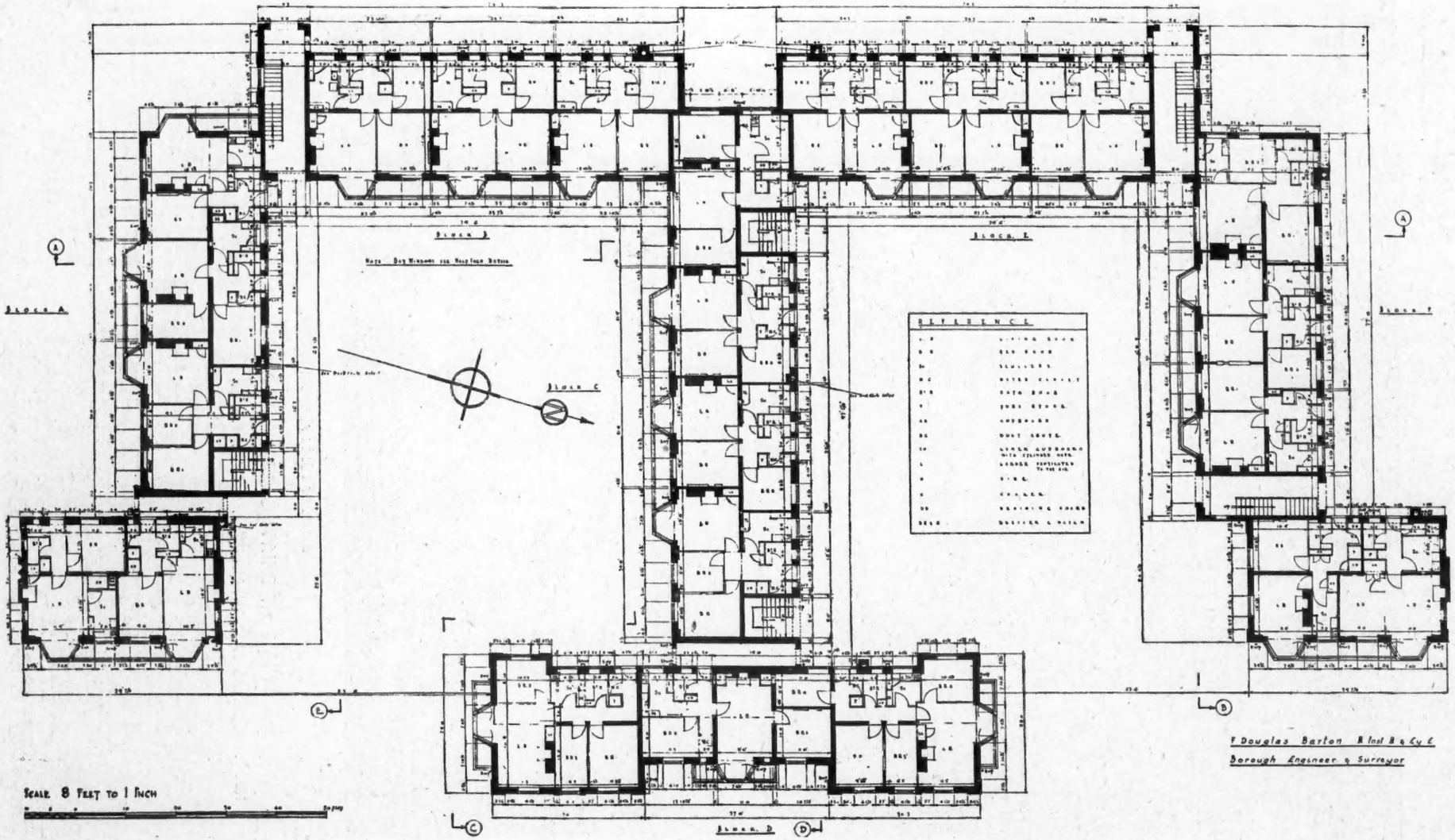
Top : CHEMISTRY LABORATORY IN MAIN BUILDING. *Below* : PLAN OF SHIPPON AND DAIRY.

THE ESSEX INSTITUTE OF AGRICULTURE. MR. J. STUART, F.R.I.B.A., COUNTY ARCHITECT.

DETAIL OF BLOCK A, LOOKING EAST.

FLATS AT EMLYN GARDENS, FOR HAMMERSMITH B.C.

MR. F. DOUGLAS BARTON, M.INST.M. & CY.E., F.R.S.I., BOROUGH ENGINEER AND SURVEYOR.



GROUND-FLOOR PLAN.

FLATS AT EMLYN GARDENS, FOR HAMMERSMITH B.C.

MR. F. DOUGLAS BARTON, M.INST.M. & CY.E., BOROUGH ENGINEER AND SURVEYOR.

GENERAL VIEW FROM EMLYN ROAD.

FLATS AT EMLYN GARDENS, FOR HAMMERSMITH B.C.

SITE.—The site has an area of approximately four acres with 700 ft. frontage, and provides for 269 flats with drying rooms and 60 perambulator and cycle sheds.

ACCOMMODATION.—The 14 blocks of buildings contain 64 two-room flats, 144 three-room flats, 39 four-room flats, and 22 five-room flats. Each block has five storeys with the exception of those directly fronting Emlyn-road, which are restricted to four storeys. Spacious courtyards with lawns and trees have been provided.

CONSTRUCTION.—The buildings are faced with multi-coloured bricks, with cast-stone and red brick dressings, the top floor of the buildings being faced with Midhurst White facing bricks and the roof with red pantiles. The floors are constructed of filler joists and concrete and the partitions of concrete slabs.

FINISHINGS.—Separate bathrooms and w.c. compartment to each flat have been provided, and a separate hot-water system. The staircases, kitchens, bathrooms and w.c.s have tiled dadoes. House refuse is disposed of by hoppers on balconies connected to chutes which discharge into open containers in underground chambers.

The contractors for this work were Messrs. E. Clarke and Sons, Ltd., of New Malden. Sub-contractors were:

Joinery, Merton Abbey Joinery Works; grates and ironmongery, Pryke and Palmer; coppers, gas fires and gas installation, Gas Light and Coke Co.; sanitary fittings, General Light Castings, Ltd.; gates and railings, T. W. Palmer and Co.; constructional steelwork; Redpath, Brown and Co.; plumbing and hot-water installation, Cornes and Haighton; reconstructed stone, Ferro Concrete Co.; electric lighting, S. Goodchild; roof tiling, G. C. Horsburgh and Co.; wall tiling, Tile Decorations, Ltd.; multi-coloured bricks, Auclaye Brickfields, Ltd.; and asphalt, Excel Asphalte Co.

ENTRANCE FROM EMLYN ROAD.

MR. F. DOUGLAS BARTON. M.INST.M. & Cy. E., F.R.S.I., BOROUGH ENGINEER AND SURVEYOR.

DEEP AIR-RAID SHELTER AT SOUTHWARK

SOUTHWARK is particularly fortunate in having a ready-made deep bombproof shelter within its boundary. The reopening of a disused length of railway tube and the addition of eight staircases has provided the borough with a shelter at a fraction of the cost which would have been incurred had the tube not been available. The first entrance was formally opened on June 24 by the Mayor of Southwark.

Parliamentary authority for the construction of the tube was given in 1892. The trains were to have been operated by rope haulage, but with the advent of electric traction in 1900 it was decided that a new route should be constructed with easier gradients and curves. The abandoned tube was about 3,800 ft. in length and it is this which, after a period of 40 years, has been reopened as an air raid shelter.

In September, 1939, the London Passenger Transport Board drew the attention of the Home Office to the possibility of using the tunnel as a civil defence shelter, and, after an examination of the structure, Sir John Anderson, Secretary of State for Home Affairs, gave his assent to its conversion into an air raid shelter. Particulars of the tunnel and valuable assistance were given to the Borough Council by Dr. David Anderson, LL.D., B.Sc., M.Inst.C.E., of Messrs. Mott, Hay and Anderson, consulting civil engineers.

Two tubes, each 10 ft. 2 in. in diameter, at depths varying from 50 ft. to 70 ft. below ground, constitute the tunnel, and the length made available for shelter purposes extends from the Borough Station to the south bank of the Thames.

The severe weather conditions of the 1940 winter caused a delay in operations of about six weeks, but plant and materials were assembled by the contractors for the first operations. The sections south of and immediately adjacent to the river were isolated by two 6-ft. concrete bulkheads fitted with watertight doors. These ensure that should the under-river section be damaged no flooding will take place in the shelter section.

Eight staircases, estimated to permit a rate of flow of 300 persons each per minute, are to be constructed, and two of these are now available for use. The staircase tunnels are formed of pre-cast concrete rings 21 in. in width and 9 ft. 9 in. in internal diameter; each ring consists of seven main sections with a key section at the top. One hundred of these rings are used on an average in each staircase entrance, and the sections are bolted and grouted, making the whole watertight in a way similar to that used in the construction of the London tube railways.

As the water level in the neighbourhood is approximately 16 ft. below surface, the tunnelling operations were carried out in compressed air, but the looseness of the soil and the presence of loose gravel beds resulted in a heavy escape of air. The difficulty was overcome by adopting the Joosten chemical process of soil consolidation, in addition to the compressed air mentioned above. Work of this nature is conducted in Britain by Messrs. John Mowlem and Co., Ltd.

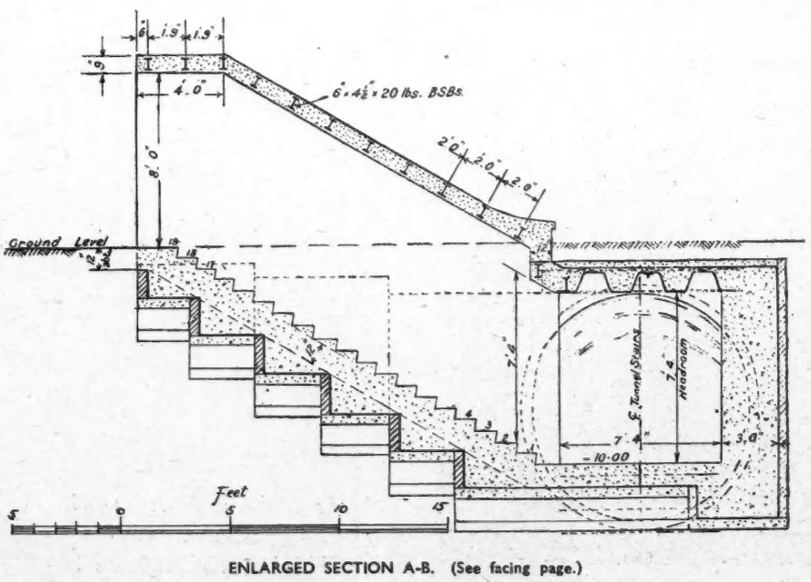
The main tunnels, constituting the air raid shelter itself, are being provided with concrete floors, electric lighting, seating, and sanitary arrangements. Consideration is also being given to the provision of a ventilating plant. The system selected, should artificial ventilation be necessary, will comprise high intakes, fans for forcing air through the staircases, and gas locks at each entrance. The intakes will be sufficiently high to be above the anticipated level of contamination. As an insurance against complete failure of lighting, each alternate lamp draws its power from an independent supply.

A census taken in the district shows that 11,280 persons would be in the Borough High-street and vicinity at peak hours, and that each of these persons would be less than 300 yards from a deep and bombproof shelter. Officially the shelter will accommodate 6,000 persons in comfort, but it is estimated that 14,000 persons could use it without overcrowding.

The estimated cost of the work is £50,000. It is being carried out by the Southwark Borough Council under the general direction of their Borough Engineer and Surveyor, Mr. Percy Smart, M.Inst.C.E., M.I.M. & Cy.E. The designs were prepared by Messrs. Mott, Hay and Anderson, and the work is being supervised by them. The contractors are Messrs. Kinnear, Moodie and Co. Messrs. Vigers and Co. have been made responsible for the survey of all properties adjoining the works.

Industrial Welfare.

Mr. Bevin's recent broadcast talk has attracted a great deal of attention to the importance of the industrial welfare worker or personnel manager, and has resulted in a great many demands being made upon the Industrial Welfare Society for details of the work on which it has been engaged since the last war. As a result a booklet, "Elements of Industrial Welfare and Personnel Management," has been prepared for the guidance of those who for the first time are becoming interested in the industrial welfare movement. A copy will be sent for 4d. (post free) on application to 14, Hobart Place, S.W.1.



ENLARGED SECTION A-B. (See facing page.)

DEEP AIR-RAID SHELTER AT SOUTHWARK.

THE GOVERNMENT'S SHELTER POLICY

STATEMENT BY THE COUNCIL OF THE A.A.S.T.A.

WE have received the following statement from the A.A.S.T.A. :—

Committees of the Association have been studying the problems of air-raid shelters and of evacuation buildings for over two years. The published results of their research have been placed at the disposal of the Government in order to help it in performing its duty of defending the people of this country by supplying schemes of air-raid protection and evacuation.

The Association's various reports have been well received by the Press and by the public generally. It must frankly be said, however, that both on the question of air-raid shelters and of accommodation for evacuees, the Association has met, until recently, with nothing but negative replies from the Government departments concerned.

The Association's pamphlet "Better Shelters" was therefore published as a direct appeal to the public. It is in their hands to influence Government action, and we are confident that an informed public opinion will do so. We do not believe that Sir John Anderson's rejection of centralised communal shelters—the only form of shelter which makes heavy protection an economic possibility—should be taken to mean that the Government's A.R.P. scheme will remain unchanged. The impact of events, the immediate danger of intensive bombardment of this country, and the rising demands of the people for "something better" may well force the Government to improve the present low standard of protection.

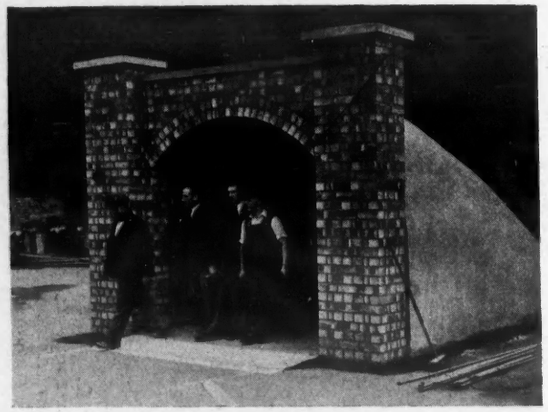
Sir John, in fact, speaking in Parliament on June 12 last, said: "There has recently come into prominence an idea that, without going to the length of providing deep or heavily protected shelters, we might have provided a type of splinter- and blast-proof shelter which would serve its purpose well in the first instance, and could be converted later into something intermediate between the splinter- and blast-proof type and what is called a deep shelter. I do not dismiss that idea at all. In fact, I believe I thought of it first. A long time ago, I put it to my technical advisers, and they said then that it looked a good idea, but that they believed it was impracticable. . . . I tell the Committee frankly that further examination of the problem has led us to the conclusion that that was an erroneous view, and *we now consider that a 50-unit communal shelter of the splinter- and blast-proof type can be built which could, without great difficulty, be adapted later to afford substantially increased protection;* and I have made arrangements to ensure that where local authorities provide splinter- and blast-proof shelters, according to designs to be modified on the lines I have indicated, the Government will pay the full grant" (italics ours).

In the light of this eleventh-hour recognition of "error" in Government policy, the Council of the A.A.S.T.A. urges the public to redouble their efforts, through the organisations to which they belong, to influence their local authorities and M.P.s in order to ensure that such shelters are built without further delay and to see that proper technical assistance is available for carrying out the work.

The type of shelter to which Sir John refers is precisely that advocated in "Better Shelters" and in "What is Wrong with Official Shelter Policy," published by the A.A.S.T.A.

British Standards Specification.

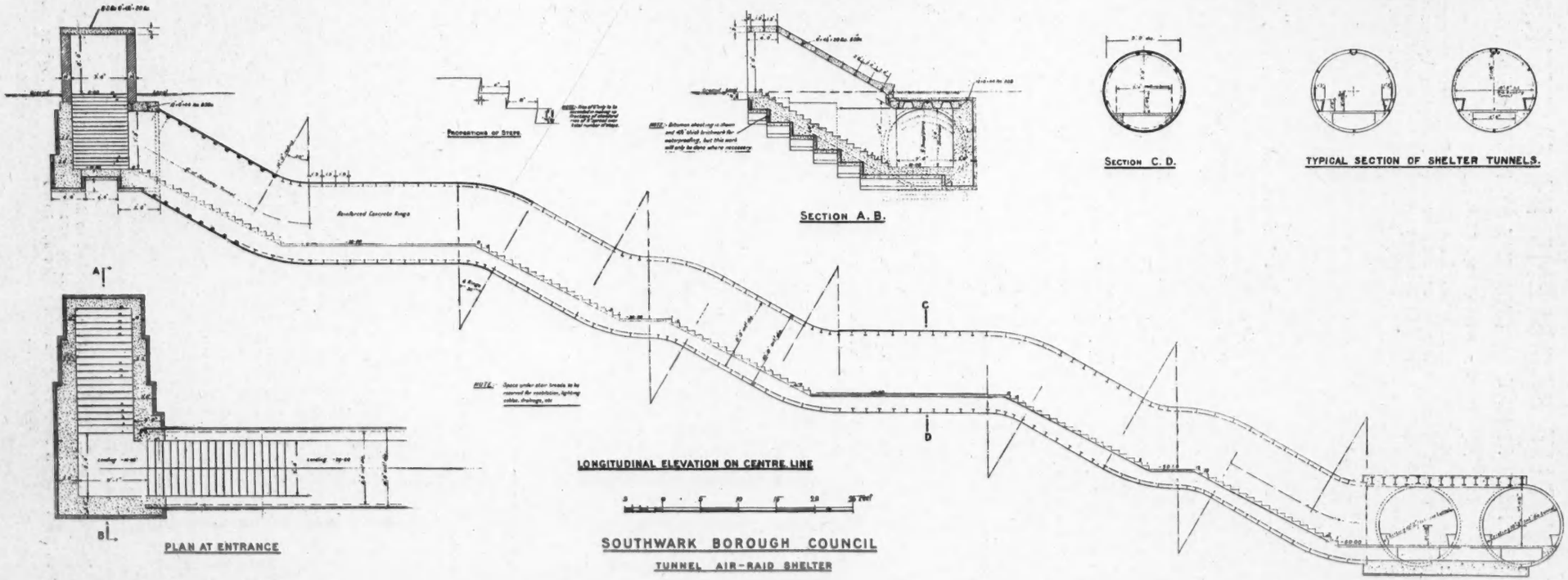
BS/ARP 33 [Supplement]. Drawings of a Stirrup Pump. 8d. (post free). Obtainable on application to the British Standards Institution, 28, Victoria-street, S W.1.



ONE OF THE ENTRANCES.

VIEW SHOWING DESCENT.

VIEW IN TUNNEL (SINCE PROVIDED WITH FLOORING AND SEATS).



DEEP AIR-RAID SHELTER AT SOUTHWARK. MESSRS. MOTT, HAY AND ANDERSON, CONSULTING ENGINEERS. MR. PERCY SMART, M.INST.C.E., BOROUGH ENGINEER.

BLACK-OUT PROBLEMS IN FACTORIES

THE MEASUREMENT OF DAYLIGHT BY PROTRACTORS.

By P. J. WALDRAM, F.S.I.

THE black-out has raised the urgent question as to how much of the glass windows and/or skylights of a factory can be permanently obstructed in existing factories or omitted—at least for the duration of the war—in new designs, and at the same time leave sufficient to afford adequate light for industrial operations to be blacked out with removable screens or blinds.

For all its simplicity this question is one which is not easy to answer, more especially as the answer, to be of any practical use, must of necessity be one which can be applied speedily with the minimum of technical knowledge to any interior and to any form of window or skylight.

In many factories it is of course possible to select the worst lit working positions whose requirements must govern the whole, and to determine the question by practical trial and error. With many factories, and in the design of factories not yet built, this may be impracticable, and a simple and rapid method of measuring and/or predetermining natural illumination is called for without delay.

The following note indicates one such method, which even if theoretically only approximate has at least the merit of abundant simplicity.

For various reasons natural illumination is invariably measured in "daylight factors," *i.e.*, the relation of the illumination at a working position indoors from which only a limited area of sky is visible to that out of doors from a complete hemisphere of unobstructed sky of the same brightness as that of the visible patch.

That part of the "daylight factor" which is contributed by direct light from unobstructed sky without any addition for light diffusely reflected from walls, ceilings, etc., or deduction for absorption by glass, and therefore capable of being ascertained geometrically, is termed the sky factor. In the majority of cases it represents nearly the whole of the illumination, the small gain by diffusely reflected light being balanced by the loss of absorption through glass in ordinary rooms, whilst in factories diffusely reflected light is generally negligible.

The process, largely used in "ancient light" disputes as to obstruction, of geometrical calculation of the sky factor is very simple, but is far too long and tedious for the present emergency, which calls for something far quicker, even if it be only approximate.

Adequate Illumination.

Various attempts have been made from time to time to define adequate natural illumination for industrial and fine work. They are usually based on the following assumption: The grumble point for clerical and ordinary work is equivalent to 1 foot candle on the numerous dull days of autumn, winter and spring in the temperate zone, as well as on wet or overcast days in summer, in all of which the sky maintains with remarkable consistency a brightness of 500 foot candles from the complete hemisphere, irrespective of the varying altitude of the sun from dawn to dusk, and therefore of latitude. It is therefore assumed that it is only necessary to fix upon daylight ratios which would give 5, 10 or 20 foot candles under the same conditions.

It may or may not be the case that the human eye is as sensitive to differences in the photometric intensity of *daylight* up to, say, 20 or 30 foot candles as it is, or seems to be, at 1 foot candle. There is no evidence that it is, and some to the contrary, but no *ad hoc* research has been published on the point.

In April last, the Building Research Station of the Department of Scientific and Industrial Research published a paper on the subject, Note No. 811, which recommended a minimum daylight factor of 5 per cent. for industrial work. As this would give 25 foot candles on a standard dull or wet day it would presumably suffice for fine work, but the Note does not indicate whether it is based on research or assumption. *Faute de mieux*, it must be accepted as a minimum for the present, more particularly as any factory may have to change suddenly from coarse to fine work.

Measurement and/or Predetermination of Natural Light by Protractors.

The same note (the material parts of which will also be found in War Time Building Bulletin No. 1 of the D.S.I.R. on Economical Designs in Steel for Single Storey Factories) embodies the valuable practical suggestion of measuring the sky factor of long skylights by means of a protractor (Fig. 1), the periphery of which is divided in terms of the sky factor afforded by the "opening angle" or distance between upper and lower vertical cut-off given by any skylight or window if it be sufficiently long to be regarded without material error as of unlimited length laterally.

To be able to measure the lighting capacity of any long skylight simply by placing a protractor on a section through it at right angles to its length and reading off values is most attractive, but the practical potentialities of this absurdly simple method of calculating and/or predetermining daylight are, unfortunately, extremely small. There are certainly many factories lit by very long skylights, but their effective length is most severely restricted indeed by sash bars and roof beams seen *en échelon*, and in addition the worst lit places whose requirements must govern the minimum

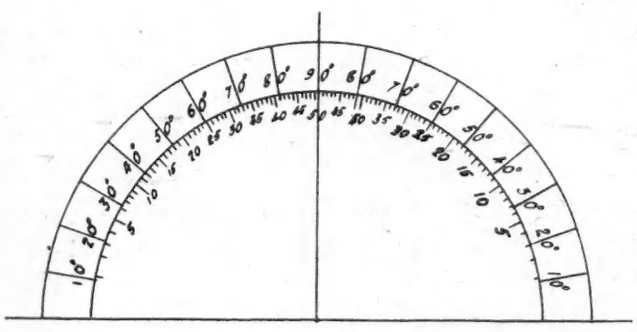


Fig. 1.—B.R.S. Protractor A for unglazed lights subtending 180° on plan.

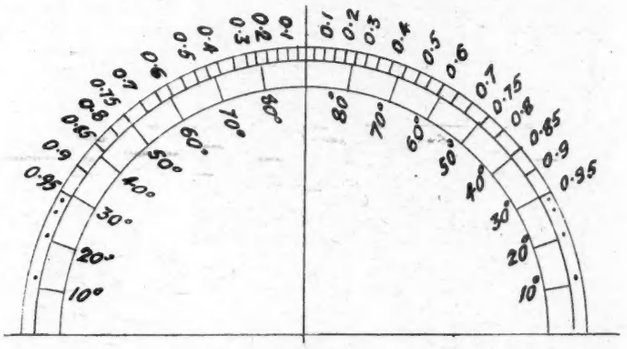


Fig. 2.—Protractor B. Multipliers to be applied to B.R.S. Protractor A for unglazed openings subtending less than 180° on plan. Lights subtending vertical angles 0° to 30° approximate.

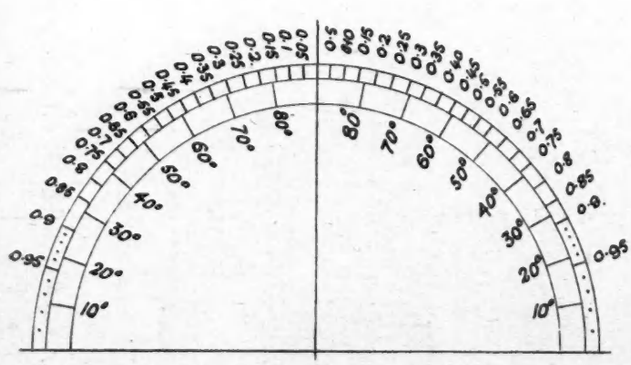


Fig. 3.—Protractor C. Multipliers to be applied to B.R.S. Protractor A for unglazed openings subtending less than 180° on plan. Lights subtending vertical angles 30° to 60° approximate.

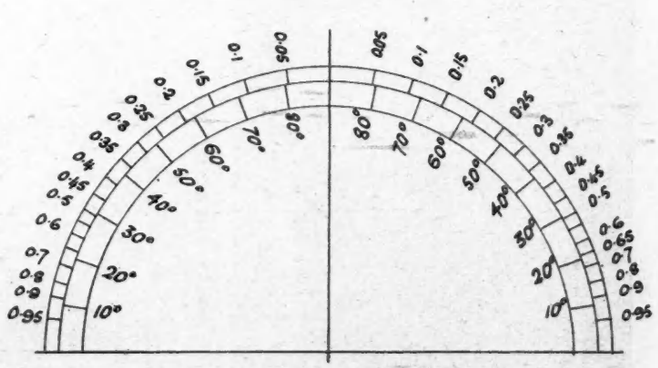


Fig. 4.—Protractor D. Multipliers to be applied to B.R.S. Protractor A for unglazed openings subtending less than 180° on plan. Lights subtending vertical angles 60° to 90° approximate.

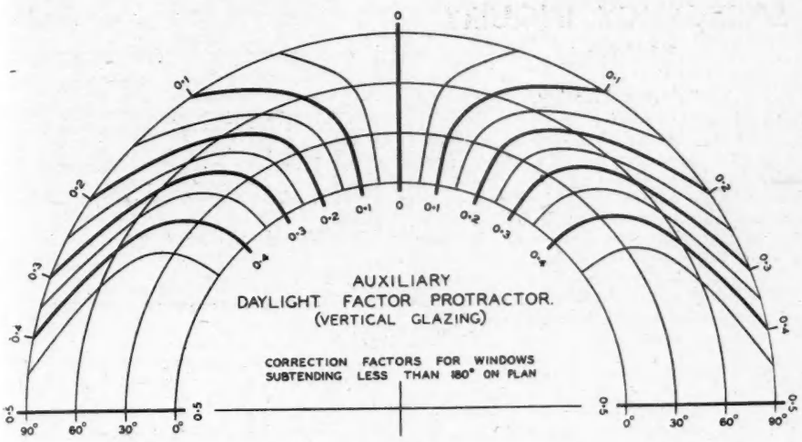


Fig. 5.—Auxiliary Daylight Factor Protractor, prepared by the Building Research Station.

illumination to be provided are near the ends and not at the middle of long skylights. Also, there are many more factories lit by skylights of limited width, and still more by windows.

Note No. 811 therefore leaves the problem practically unsolved until reduction factors can be given of the necessary allowance for lateral cut-off on plan. Here difficulty arises.

Radial lines of horizontal cut-off on plan do not divide the projected geometrical figures which represent the illuminating capacity of parallel strips of low-angle sky between, say, 10 deg. and 20 deg. of vertical cut-off in the same proportion as the same radial lines divide the figures representing the light from parallel strips of high-angle sky—*e.g.*, a parallel strip of sky lying between, say, 70 deg. and 80 deg. of vertical cut-off. Any reduction factors must therefore be approximate.

But although scientific precision is not attainable, the inevitable degree of approximation can be reduced to limits which are of no practical materiality by using a choice of horizontal protractors.

When attempting, at the instance of the Departmental Committee of the Home Office on Factory Lighting through the Illuminating Engineering Society, the solution of the problem outlined in the first paragraph of this article, the writer reasoned that in view of the general uncertainty as to what value of daylight factor represented adequacy for industrial work, even a substantial degree of approximation in the general method would form little or no practical detriment to the obvious advantage of being able to solve any question of daylight illumination merely by applying protractors on plans and sections of the windows and/or skylights to be considered.

He therefore calculated protractors B, C and D (Figs. 2, 3 and 4) for the middle 10 deg. zone of three divisions of angular cut-off, *viz.*, 0 deg. to 30 deg., 30 deg. to 60 deg., and 60 deg. to 90 deg.

Although they were set out by planimeter measurements instead of exact geometrical mensuration, and are therefore of necessity styled as approximate, they give results which coincide so closely with exact determination by the usual tedious methods as to justify a reasonable expectation of supplanting the latter to a large extent.

Consider, for example, the case of a skylight opening subtending 25 deg. to 30 deg. vertically and 60 deg. to 45 deg. on plan. The average of four planimeter measurements of this, set out on the usual rectangular measuring diagram described in the D.S.I.R. report on the subject, Technical Paper No. 7, gave a value for the sky ratio of 0.25 per cent. By the B.R.S. protractor B, Fig. 1, the opening should have afforded 2.4 per cent. had it been of unlimited length, *viz.*, had it subtended 180 deg. on plan, or 1.2 per cent. if it subtended 90 deg. Protractor B, for angles of vertical cut-off 0 deg. to 30 deg. gives the correction factor for a lateral cut-off of 60 deg. to 45 deg. as 0.81 — 0.61, or 0.2. 1.2 by 0.2 = 0.24 per cent.

For a second trial take the very different case of the unobstructed part of half a larger window subtending 60 deg. to 45 deg. vertically and 90 deg. to 45 deg. laterally. This opening similarly set out on a measuring diagram and carefully measured gave a sky factor value of 3.54 per cent. for the half window. The B.R.S. protractor, Fig. 1, gives a sky factor value of 10 per cent. for an opening between 60 deg. and 45 deg. of vertical cut-off and 180 deg. on plan, or 5 per cent. for 90 deg. on plan. The appropriate protractor C, Fig. 3, gives a multiplier of 0.69 and 5 per cent. by 0.69 = 3.45 per cent.

Such remarkable accuracy cannot be expected in the high angle sky between 60 deg. and 90 deg., where the values change rapidly. If the patch of sky to be measured lies below the middle 10 deg. represented by protractor D, the result will be low, and a closer approximation to exact measurement will probably be obtained by averaging the factors given by protractors C and D. For example, let the problem be as to whether sufficient light would be left to a foundry requiring 0.5 per cent. daylight factor after permanently blocking one half of a skylight subtending at the worst lit point on the floor 60 deg. to 70 deg. vertically, and 80 deg. to 40 deg. on plan; the loss by glass, dirt, etc., being estimated at 40 per cent. By accurate calculation as before the sky factor is found to be 1.8 per cent., 60 per cent. of which is 1.08 per cent., indicating that the proposed permanent black-out, if properly arranged, is feasible. The B.R.S. protractor A gives 8 per cent. for 180 deg. and 4 per cent. for 90 deg. Protractor D calls for a reduction factor of 0.375 — 0.055, or 0.32, giving a sky factor value, probably too low, of 1.28 per cent. The reduction factor called for by protractor C is 0.58, and the average of the two is 0.45. 4 per cent. by 0.45 is 1.8 per cent., which in this case happens to be exactly correct.

The protractors and the above results were communicated to the B.R.S., who promptly evolved the ingenious form of combined protractor shown in Fig. 5, which enables the necessary correction for horizontal cut-off to be ascertained with even greater precision.

Similar protractors can be set out for glazed openings, as by the use of measuring diagrams corrected for glass absorption such as described in *The Builder*, October 1, 1937. Such protractors for 180 deg. lateral opening are given in the B.R.S. note, and the protractor of correcting factors, Fig. 5, relates to glazed openings.

The writer has also been furnished by the B.R.S. with protractors calculated for inclined glazing in skylights. The publication of their complete report on the subject should constitute a novel and notable addition to the technique of measuring and predetermining natural illumination.

In the meantime, it is hoped that the above will enable the immediate difficulties of factory owners and the designers of new factories to be overcome.

LAW REPORTS

DUTY OF LIGHTING STREET REFUGES DURING WAR.

COURT OF APPEAL.

Before LORDS JUSTICES MACKINNON and LUXMOORE, and Mr. JUSTICE TUCKER.

Greenwood v. Central Service Co., Ltd. (St. Marylebone Borough Council, Third Parties).

This case raised an important question as to whether the Marylebone Borough Council had committed a breach of its statutory duty in not keeping the bollard of a refuge in the middle of Goodge-street, W., lighted, or whether the Council's only obligation was to use reasonable diligence and care in giving warning of the existence of the obstruction, having regard to the fact that under the Lighting (Restrictions) Order, 1939, it is now an offence for any person to cause a light to be displayed during the hours of darkness.

The case came before the court on the appeal of the defendants, the Central Service Co., Ltd., from the judgment of Deputy Judge Elliott Gorst, sitting at the Bloomsbury County Court, dismissing their claim against the Council for contribution towards the damage and costs defendants had been ordered to pay to the plaintiff, Miss Edna Greenwood, who at 8 p.m. on October 7, 1939, sustained injury whilst being driven in a taxi-cab of the defendants as the result of the vehicle colliding with the temporarily unlighted bollard of the refuge in the middle of Goodge-street. Miss Greenwood, who was awarded £80 damages against the defendant company, alleged that at the time of the accident the taxi-cab was being driven too fast, whilst the claim of the company of contribution from the Council was on the ground that the collision was caused by the refuge being temporarily unlighted.

Evidence was given in the County Court that the Council, in order to comply with the provisions of the Lighting (Restrictions) Order, 1939, had hung one candle-power hurricane lamp on the bollard of each refuge in the district, and employed men to travel round the district on a lorry in order to see that the lights remained lighted. The light on the Goodge-street refuge had gone out when the accident happened.

The Deputy County Court Judge held that, in the circumstances, the Council had not been guilty of negligence, and that there was no liability on them, and dismissed the defendant company's claim against them as third parties. From this result the defendant company now appealed.

Mr. Gilbert Paull, K.C., and Mr. M. Berryman appeared for the appellant company, and Mr. S. R. Edgedale for the respondent Council.

At the conclusion of the arguments the Court dismissed the appeal.

Lord Justice MacKinnon, in the course of giving judgment, said that if the accident had happened in time of peace it would have been the duty of the Council to have lighted the bollard so as to give warning of its existence, but under the Lighting (Restrictions) Order, 1939, it was ordered that no person should during the hours of darkness cause any light to be displayed. The effect of that Order was to repeal temporarily the obligation imposed by Section 130 of the Metropolis Management Act, 1855. In the circumstances, the question was whether the Council were liable as joint *tort feasors*, which depended on whether there was an absolute obligation on the Council to light that obstruction, or only an obligation to use diligence and care. The County Court Judge had held that the only obligation was for the Council to use reasonable care, and accordingly found as a fact that there was no negligence. He (the Lord Justice) agreed with the County Court Judge, and thought that the appeal should be dismissed.

The other members of the court concurred, and the appeal was dismissed with costs.

MINING OPERATIONS WHICH CAUSE SUBSIDENCE. CLAIM TO CUSTOM REJECTED.

HOUSE OF LORDS.

Before LORDS MAUGHAM, ATKIN, WRIGHT, ROMER and PORTER.

Newcastle-under-Lyme Corporation v. Wolstanton, Ltd.

Newcastle-under-Lyme Corporation v. Attorney-General of the Duchy of Lancaster.

These actions, which came before the House on the appeals of both defendants from the judgment of the Court of Appeal affirming the judgment of Mr. Justice Farwell in the Chancery Division upon a preliminary point of law which raised the question whether the defendants could plead a custom and a right by prescription to work the mines under or near the plaintiff Corporation's land so as to let down the surface or injure the buildings thereon without paying compensation.

The Corporation claimed a declaration that they were not so entitled and also an injunction to restrain such mining operations.

The Court of Appeal and Mr. Justice Farwell, upon the preliminary point of law, held that such a custom or prescriptive right was unreasonable and invalid and could not be pleaded by the defendants, and the latter now appealed.

At the conclusion of the arguments both appeals were dismissed with costs.

Lord Maugham, in delivering judgment, said he saw no reason for disturbing the judgment in the case of "Hilton *v.* Lord Granville," which had stood as the decision of a court of high authority for many years.

The other noble and learned Members of the House concurred.

TERRITORIAL ARCHITECT'S CLAIM FOR FEES.

KING'S BENCH DIVISION, BELFAST.

Before the LORD CHIEF JUSTICE.

Crawley v. Co. Antrim T.A. and Air Force Association.

Is an architect who joins the Territorials as a Sapper in the R.E. entitled to fees for professional work done in his spare time after his enlistment? was the question set the Lord Chief Justice in the King's Bench, Belfast, in an unusual record in which Thomas Albert Crawley, architect, 58 Brunswick-road, Bangor, sued the County Antrim Territorial Army and Air Force Association, with registered offices at 5, Bedford-street, Belfast, to recover £125 for work and labour done in preparing plans for the erection of a drill hall at Girdwood Park, Belfast, also for damages for breach of contract to employ plaintiff as architect for the erection of the drill hall, and alternatively for the return of all plans, sketches, and for an injunction restraining the defendants from making use of the plans.

Defendants, in their reply, contended that plaintiff was at the time a tradesman and was paid tradesman's wages.

Colonel D. C. Lindsay and Major J. Maynard Sinclair gave evidence that plaintiff was earmarked as a draughtsman in the company, and there was never any suggestion that he should receive payment for the plans.

The Lord Chief Justice said that he was satisfied the plaintiff did the work on a voluntary basis and his claim could not possibly succeed.—*Irish Times.*

Factory Safety.

"A lost-time accident in a factory should be regarded as much a gain to the enemy as a casualty in the armed Forces." This statement was made by Lord McGowan, Chairman of Imperial Chemical Industries, in his presidential address to the National "Safety First" Association last month.

The Industrial Welfare Society and the National "Safety First" Association produce a joint accident prevention service for industry. The latest addition is a little booklet specially designed to draw the attention of new employees, with the aid of humorous illustrations, to the fundamentals of works safety. Copies may be obtained from the National "Safety First" Association, 52, Grosvenor-gardens, London, S.W.1.

EMERGENCY INQUIRY BUREAU

Terrazzo Flooring.

SIR,—*Terrazzo flooring was put down in an infirmary building thirteen years ago. During the past six months only, white powder has been coming off. Three coats of silicate of soda have recently been put on the floor and all the cracks filled with cement, but still the white powder covers the floor. We have thoroughly cleaned a patch of the terrazzo and rubbed it, and no powder comes off, but it will reappear the next day. Comment and advice would be appreciated.*

J. B.

A correspondent writes as follows :—

The floor is too old to know whether the powdering started soon after it was laid; if that was so, it could be caused by using a defective cement—either of the grey or white type. It can also be caused through the marble chippings that terrazzo is composed of, being too fine or dusty. In any case of dusting of terrazzo it would be inadvisable to use silicate of soda. This may in my view affect the marble chippings. In fact, I would rather try a non-slip floor polish. One other point. Is the floor in contact with heating pipes? This may cause the cement to lose its nature.

If the face is not badly worn, and there is a fair amount of the Terrazzo, it might pay to re-rub with snakestone and fine grit and get a fresh face; in any case the face would need preparation before applying any floor dressing. Other than this, it seems that the only remedy is to re-lay. G. W. H.

[Names of manufacturers of floor dressings will be supplied on request.—ED.]

WAR-TIME BUILDING BULLETIN

No. 7 : "HOUSE CONSTRUCTION."

SHORTAGE of timber practically prohibits its use to-day for house building. As a result some form of construction that uses steel reinforcement must be employed. This bulletin* sets out certain standards by which to judge proposals for war-time houses, and economy of steel is the first consideration.

To obtain figures with which to make comparisons, two typical designs for small houses have been examined, and their constructional details worked out. Tables are given to show how much steel would be needed to erect these houses using either "precast" or "in situ" construction. Although methods of construction "in situ" require considerably less steel, they need more shuttering than the "precast" systems. To obtain these data a hollow tile and concrete construction was chosen. But it is emphasised that many other forms of construction might give equally good or better results, and that the results obtained are intended to set only a maximum limit to the steel which can be permitted. Tables are given showing the possibilities of this hollow tile type of construction both in "precast" and "in situ" forms.

Considerable stress is laid on the importance of proper planning for war-time conditions. Spans must be kept small and cross walls used for load carrying whenever possible. Flat roofs are stated to be more economical in steel than pitched roofs, and must therefore be used even if at some later date it is felt necessary to alter them.

Heat insulation is more important with flat roofs than with pitched roofs, and a section on this subject is included, with a table showing comparative values of different forms of roof. A section deals with the possibility of trouble from smoky chimneys on flat roofs.

Sound insulation between houses is considered, and it is pointed out that by adopting proper methods very good results can be obtained at comparatively little additional expense.

On the subject of air raid precautions, the Bulletin states : Fire risks will be considerably reduced by the adoption of house construction of the kind described above. Timber is practically eliminated and attic lumber rooms cannot be formed. A hollow block roof is not sufficient to withstand incendiary bombs, and a 4-in. solid reinforced concrete roof could be substituted or a 3-in. concrete topping placed on top of the hollow tile slabs.

Three types of A.R.P. roofs have been examined for the "A" type house, without overhanging eaves :—

1. Precast roof units, semi-continuous, with an additional 3 in. of concrete placed as "in situ" topping.

2. "In situ" hollow tile with 3-in. topping.

3. A solid 4-in. roof slab, cast "in situ." These are illustrated in Figs. Nos. 13-15.

* War-Time Building Bulletin. No. 7. "House Construction." H.M. Stationery Office, price 1s. net.

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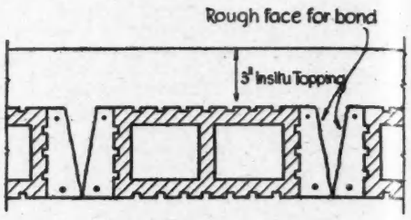


FIG. 13.—*4½-in. Precast Roof Units with 3-in. Concrete Topping*

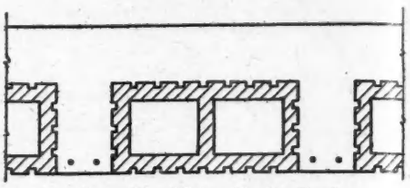


FIG. 14.—*7½-in. in situ Roof*

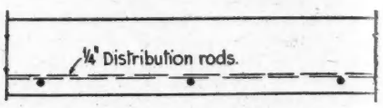


FIG. 15.—*4-in. Solid Concrete (in situ)*

Note (*a*) The ends of all hollow tiles to be solidly jointed in cement mortar. (*b*) The top and sides of all precast units are to be left rough to obtain good bonding with "in situ" filling or topping, if any.

A.R.P. SCHEMES

LONDON.

BECKENHAM.—Shelters are to be erected in Eden Park-ave., Shorelands-rd., Linksway, Rydal Mount frontage and junction of Red Lodge-rd. and The Avenue. Cost, £1,220, for T.C. Plans are being prepared for the provision of further shelters.

BEDDINGTON.—T.C. approved 50-person shelter on private land, at £150, and lean-to shelter for 50 persons, at £90.

BETHNAL GREEN.—Civil Defence Committee of B.C. accepted 14 tenders for construction of more shelters, at £25,000.

CHERTSEY.—The U.D.C. has decided to provide shelter accommodation in the district as provided for in Home Office Circular, and surveyor has been instructed to obtain materials for the necessary work.

DAGENHAM.—A contract for the concreting of 1,000 steel shelters has been placed with Mr. T. Houslip. The average price for a six-person shelter is £3 4s. 4d., and for a 3-ft. depth £3 3s. The time to complete is 10 weeks. A full list of tenders is on page 128.

DEPTFORD.—Messrs. W. A. Lewis and Partners, 130, Regent-street, W.1, are architects for an air raid shelter at 63-69, Deptford High-st.

FINSBURY. — B.C. accepted following tenders: For seven additional shelters in southern area, J. Lawson and Co., Ltd., at £2,197; lighting of Finsbury-sq. shelter, Smith and Hammond, Ltd., at £120, and J. Jarvis and Son for nine and one-half units of shelters, at £1,206.

HESTON AND ISLEWORTH.—Borough Surveyor has prepared plans for decontamination facilities at first-aid posts in the borough, estimated to cost £1,005.—T.C. accepted £4,035 tender of Wm. Old, Ltd., North Harrow, for waterproofing 1,250 steel shelters.

HOUNSLOW.—Shelters on 17 sites to accommodate 3,000 persons are proposed in the High-st. area, Hounslow, by Heston and Isleworth T.C. Plans by the Borough Surveyor are to be submitted to Middlesex C.C.

ISLINGTON.—Frank Batty and Smith, Ltd., Paddington, W.2, are erecting public surface shelters on various sites for Islington B.C., at £130 each.

KINGSTON.—T.C. accepted Adams Construction, Ltd., for shelters, at £411; Limpus and Son for shelters, at £443 15s.; F. and H. F. Higgs, Ltd., underground public shelters in Market-pl., at £2,030. Protection for personnel at car park, at £200 to £300, and further public shelter accommodation for 400 persons, on three sites also to be provided.

KINGSTON-ON-THAMES.—For shelters at 14 houses, the T.C. have accepted the £405 tender of *Adams Construction, Ltd.—T.C. are to obtain tenders for 13 domestic shelters on various sites.

LAMBETH.—B.C. placed contracts for shelters with following firms: Ixworth (Contractors), Ltd.; Wm. Blood, Ltd.; Wm. Moon and Sons, Ltd.; R. Cawley and Sons, Ltd.; J. Parsons; Hall, Beddall and Co., Ltd.; Lansdowne Building Co. (London), Ltd.; Bridge, Walker, Ltd.; W. A. King (Brixton), Ltd.; and Sykes and Son, Ltd.

LEWISHAM.—A contract for three shelters (group domestic type) has been placed by the borough council with Messrs. Henry Kent (Builders), Ltd., 51, Beacon-rd., S.E.13.

ST. MARYLEBONE.—For erection in houses occupied by persons of limited means of domestic surface shelters, for T.C.:—John West and Co., 131, Northcote-rd., S.W.11, £262 10s. 6d.; Winyards, Ltd., 10, Sherlock-mews, W.1, £146 15s.; Yeomans and Partners, Ltd., 41, Upper Berkeley-st., W.1, £125 14s. 4d.

ST. MARYLEBONE.—Tenders totalling £5,979 16s. 9d. for 65 shelters for 2,892 persons have been accepted by the T.C. as follows: Rodec, Ltd., 106, George-st., W.1; John West and Co., 131, Northcote-rd., S.W.1; and John Lewis Building, Ltd., Phoenix Yard, Princes-st., W.1.

ST. PANCRAS.—Messrs. Broad and Co., Ltd., West Drayton, are to supply 1,000,000 stock bricks for St. Pancras shelter programme. 2,000,000 more are required.

ST. PANCRAS.—T.C. has accepted tenders for: Construction of surface shelters at estates, etc.: (1) Knollys House—*A. J. Thompson and Co. (London), Ltd., £125; (2) Cumberland Market estate, Windsor, Datchet and Tintern Houses—*Albert Monk, £1,244; (3) L.M.S. estates (Polygon Buildings, Mornington House and Stalbridge House)—*Frank Batty and Smith, Ltd., £1,268; (4) St. Martin's Almshouses—*A. J. Thompson and Co. (London), Ltd., £120; and (5) 20-26, Fortess-rd.—*A. J. Thompson and Co. (London), Ltd., £160 16s. A contract for domestic surface shelters (Contract No. 16) has also been placed with Frank Batty and Smith, Ltd.

SHOREDITCH.—Frank Batty and Smith, Ltd., Paddington, W.2, are erecting public surface shelters in Fairbank-st., E.1, for B.C., totalling approximately £684.

SOUTHWARK.—B.C. accepted following tenders, totalling £20,169, for shelters:—New Kent-rd. and other streets, Jas. Carmichael, Ltd., £700; Palatinate estate, Jas. Carmichael, Ltd., £5,760; Area A scheme, Jas. Carmichael, Ltd., £3,423; Area B scheme, Jas. Carmichael, Ltd., £1,120; Bath-st. and Alpha-sq., Jas. Carmichael, Ltd., £517; Balfour-st. area, Castle Bros., Ltd., £969; Area D, Castle Bros., Ltd., £679; Areas 4, 5 and 6, J. A. Dumayne and Co., Ltd., £2,292; Area C scheme, Castle Bros., Ltd., £2,419; Cliftonbdgs., J. A. Dumayne and Co., Ltd., £299; Warren-bdgs., J. A. Dumayne and Co., Ltd., £199; and Olney-rd. area, J. A. Dumayne and Co., Ltd., £1,155. The B.C. is also to adapt premises to provide accommodation for A.R.P. personnel, at £104, and to provide ventilation plant at tunnel shelter, at £2,500.

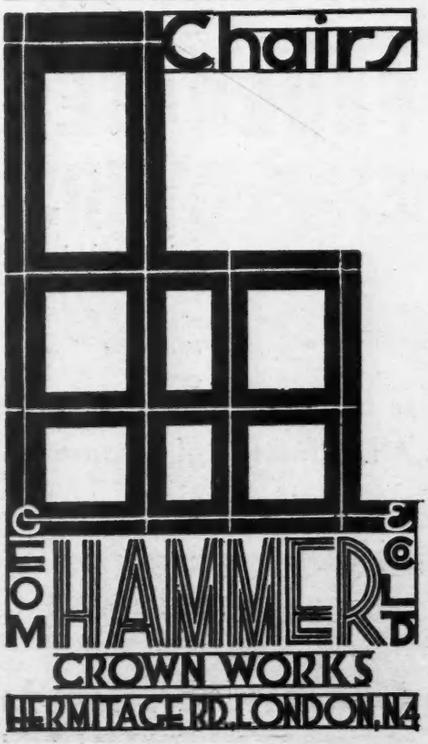
STAINES.—Plans passed by U.D.C.: Egham and Staines Electricity Co., substation, Stanwell; Fear Bros., Ltd., additions to office, Station-approach, Ashford; Congregational Union, hall, Viola-ave., Stanwell.

TOTTENHAM.—B.E. to use two stable bays, A.F.S. store, at £155.—Plans passed for J. Rawson, Ltd., for shelter, Factory-yd., Reform-row, N.17.

WOOLWICH.—B.C. approved, subject to Minister of Home Security, surface public shelters by B.E., at £368 3s., and a shelter at £104.—Public shelters to be provided by B.E., at £4,204 9s. and £541 9s. 6d.—Air raid precautions protective measures in connection with use of Eltham Baths as public hall, to be carried out by B.E., at £120.—Tender of Thomas and Edge, Ltd., for domestic brick built surface shelters accepted.

PROVINCIAL.

ATHERTON.—Erection of communal public shelters on various sites, for the U.D.C. Architects, Law and Grimshaw, Market-st., and J. C. Prestwich and Sons, Bradshawgate-cham., Leigh. Contractors: *R. and W. Gregson, Milk-st., Tyldesley; *S. Hayman, 357, Holden-rd., Leigh; *G. and J. Seddon, Ltd., 5, Manchester New-rd., Little Hulton; *E. and S. Street, Ltd., Bolton-rd., Kearsley; *S. Temperley, 18, Leighton-st., Atherton; and *W. E. Yates and Sons, 15, Sunnymead-ave., Astley Bridge, Bolton.



BILLINGHAM-ON-TEES.—U.D.C. to provide first-aid posts at Wolviston and Billingham.

BIRMINGHAM.—E.C. accepted the following tenders:—Erection of shelters at the following playing fields: (1) Metchley Park; (2) Henry-rd., Yardley; (3) Belchers-la., Bordesley Green; and (4) Birches Green. *Morris, Jacombs and Sons, Ltd., Stechford-rd., Birmingham at (1) £155; (2) £310; (3) £310; and (4) £310.

Aberdeenshire C.C. to erect shelters.

CAERNARVONSHIRE. — E.C. propose A.R.P. work at council schools, to cost £600.

CHESTER.—T.C. propose 100 public surface shelters on various sites. C. Greenwood, M.I.C.E., C.E.

CORBY.—For concreting 182 Anderson shelters, U.D.C. placed contract with G. H. Greasley, of Leicester, at £587; A. Tailby and Son, Ltd., Desborough, to construct communal shelter at rear of Pen Green flats for U.D.C., at £99.

DERBY.—T.C. propose 12 communal shelters. C. H. Aslin (F.), Borough Architect.

DONCASTER.—T.C. to erect brick and concrete public surface shelters. F. O. Kirby, B.E.

DURHAM.—County P.A.C. recommending £1,700 on protection of relief offices against air raids.

EASINGTON.—R.D.C. received sanction to erect shelters. C. W. Clarke, S.

GATESHEAD.—T.C. to construct public shelter for 100 people. F. H. Patterson, B.S.

HALIFAX.—Works for T.C.—Domestic and communal surface shelters: H. Blamires, Dewsbury; E. and T. Bower, Ltd., Pickles Bros., Ltd., J. Walker and Son, Ltd., Crossley and Radcliffe, Ltd., H. Baxendale and Son; and shelters at Modern School: H. Baxendale and Son. D. T. Lloyd Jones, B.E., Crossley-st., prepared plans. Rest of contractors of Halifax.

HASLEMERE.—Approval given by Emergency Committee to two shelters, one on Lion Green and the other at fair ground, Wey Hill, each to accommodate 30 people, at £175.

HORBURY.—U.D.C. propose communal domestic shelters on various sites. H. Hillier, E. and S.

ILFRACOMBE.—U.D.C. to build shelters in High-st., Fore-st. and Wilder-rd., and tunnelled lane leading to Wildersmouth beach is also to be converted into a shelter.

KIDSGROVE.—U.D.C. propose surface shelters at Liverpool-rd., Goldenhill Bank and High-st., Harriseahead. H. W. Crowther-Green, S.

LEICESTERSHIRE.—E.C. propose additional shelters in council schools, to cost £10,000; and additional public shelters. W. Keay, County Architect.

LEIGH.—Direct Labour Department are erecting 47 communal brick shelters, each to accommodate 48 persons, for the T.C.; also erection of domestic brick surface shelters. A. T. Clare, B.E. and S.

LYMM.—U.D.C. propose public shelters. D. Mort, S.

MANCHESTER.—The City Council is to provide shelters at two police section houses at a cost of £660.

MIDDLEWICH.—U.D.C. propose communal shelters.

SCOTTISH.

AYRSHIRE. — R. Lindsay, architect, Wellington-chmbs., Wellington-sq., off Sandgate, Ayr, is to design A.R.P. shelters at County school for C.C., at £7,500.

BRIDGE-OF-DON AND BUCKSHAVEN.—From plans by their own architects,

FALKIRK.—Joint A.R.P. Authority to erect building for purpose of decontaminating protective clothing.

GLASGOW. — Plans prepared by T. Somers, Office and Public Works, Municipal-bldgs., for shelters at Ruthill Hospital. Contractors: W. S. Gordon and Co., Ltd., Partick, at £1,328 13s. 6d.

MORAYSHIRE AND NAIRN.—Joint C.C. approved £5,000 for shelters throughout joint county.

MOTHERWELL.—Plans in hand for 35 shelters. Plans by Victor Wilson, architect, 39, Curry-st., Motherwell-Wishaw.

PERTH.—T.C. to proceed with 23 further shelters at various sites.

WISHAW. — Burgh Architect prepared plans for 35 shelters.

CONTRACTS OPEN

For some contracts still open, but not included in this list, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender, that a fair wages clause shall be observed, that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender, unless stated to the contrary. The dates at the head of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained. Abbreviations: (A.) for A.R.I.B.A.; B. of E. for Board of Education; B.C. for Borough Council; B.E. for Borough Engineer; B.S. for Borough Surveyor; C. for Clerk; C.B. for County Borough; C.C. for County Council; C.E. for County Engineer; C.S. for County Surveyor; D.S. for District Surveyor; E. for Engineer; E.C. for Education Committee; (F.) for F.R.I.B.A.; (L.) for L.R.I.B.A.; M.W.B. for Metropolitan Water Board; M.H. for Ministry of Health; M.T. for Ministry of Transport; P.C. for Parish Council; R.D.C. for Rural District Council; S. for Surveyor; T.C. for Town Clerk and Town Council; and U.D.C. for Urban District Council.

BUILDING.

AUGUST 5.

Great Yarmouth.—C.B. construction of approx. 150 communal shelters on various sites. B.E., Town Hall. Dept. £2 2s.

Potters Bar U.D.C.—Erection of report and control centre for the U.D.C. E. Carr, E. and S., Wyllyotts Manor, Darkes-la. Deposit £2 2s.

Stourbridge T.C.—Domestic surface shelters, contracts 12, 13, 14 and 15, for T.C. G. N. Maynard, B.E. and S., Council House.

Wembley T.C.—Public surface shelter to accommodate 400 at Eastwoods Wharf. Borough Treasurer, Town Hall. Deposit £1 1s.

AUGUST 6.

Weymouth and Melcombe Regis B.C.—Three transformer sub-stations. E. and S., 6, Pulteney-bldgs.

AUGUST 7.

Barrow-in-Furness C.B. — Provision at shelters in basements of public library, Imperial Garages, Sidney-st., the Gaiety cinema, Abbey-rd., 57, Duke-st., and 62, School-st. Mr. F. L. Wooldridge, A.M.Inst.C.E., B.E. and S., Town Hall.

AUGUST 8.

Rochdale C.B.—Alterations at the fire station. B.S., Town Hall.

AUGUST 9.

†High Wycombe.—Stripping and reslating roofs (approx. 370 squares), height, ground to eaves, 30 ft.; new slates only. Thurlow and Lucas, architects and surveyors, 25, High-st., High Wycombe.

AUGUST 12.

Cork.—Alteration and additions to the Midleton District Home, Midleton, for South Cork County Board of Public Assistance. James Hurley, secretary, Boardroom, Douglas-rd. Dep. £10.

Ilford T.C.—Erection of sheds at A.F.S. stations. B.E., Town Hall. Deposit £3 3s.

*** Merton and Morden U.D.C.**—Repairs, etc., to 540 houses; and paving 390 super yds. with granite concrete paving slabs. S. Deposit £1 each contract.

West Riding of Yorks C.C.—(1) Alterations at local Public Assistance Office; (2) pointing to stonework at Grenoside Institution, nr. Sheffield; (3) alterations and additions to domestic rot-water apparatus at Pontefract Institution; (4) proposed new fire staircases at Selby Institution. Acting West Riding Architect, County Hall, Wakefield.

West Riding of Yorks C.C.—Improvements to buildings (all trades) at Earby New-rd. school. H. Marsden, Divisional Clerk, Education Office, Skipton.

AUGUST 13.

Blackrock.—New school in Ballinlough-rd., Blackrock, Co. Cork. P.P., Blackrock.

AUGUST 14.

Sheffield S.C.—Engineering Dept., proposed College of Art and Technology, Arundel-st. W. Geo. Davies, City Architect. Dep. £2.

***Wellington (Salop) R.D.C.**—12 shops and maisonettes at Donnington Wood, near Wellington. Walter Bond, Quantity Surveyor, 3, Newhall-st., Birmingham. Dep. £2 2s.

AUGUST 15.

Clare R.D.C.—Erection of pumphouse with site. H. Brown Thake, S., 10, High-st., Haverhill. Deposit £2 2s.

Crewe.—Pumping station building at Eaton. Herbert Lapworth and Partners, engineers, 25, Victoria-st., Westminster, S.W.1. Dep. £3.

AUGUST 19.

Grantham B.C.—227 houses, with drains, fences, paths, roads and incidental works, Dysart-rd. B.S., Guildhall. Dep. £3 3s.

Merton and Morden U.D.C.—Construction of (1) 9 brick surface shelters; (2) internal watertight concrete linings to 200 Anderson shelters; (3) 750 domestic surface shelters. E. and S., Council Offices, Kingston-rd., Merton, S.W.19. Dep. £1.

NO DATE.

East Lancashire.—Erection of shelters at elementary schools in East Lancashire, for the C.C. County Architect, County Offices, Preston.

Huyton-with-Robey U.D.C. — Erection of brick domestic shelters. Application to A. W. Thomas, Council Offices, Huyton, near Liverpool.

Milford Haven U.D.C.—72 houses including roads and sewers at Hakin. T. V. Williams, E. and S., Town Hall. Dep. £3.

PAINTING, ELECTRIC LIGHTING, HEATING, &c.

AUGUST 5.

Bury.—Painting and cleaning at Infirmary. H. Wilkinson, Superintendent.

Hoole U.D.C.—Exterior painting 78 houses, Hoole-la., Myrtle-gve., Maple-gve., and Cedar-ave., and buildings in park, etc. C., Council Offices.

AUGUST 6.

Croydon T.C.—External painting of sections of housing estates for the T.C. Borough Valuer, 71, Park la., Croydon. Deposit £1 1s.

AUGUST 7.

Burnley E.C.—Internal painting at St. Mary's School. B.E., Town Hall. Dep. 10s. 6d.

AUGUST 8.

Wadebridge R.D.C.—Painting of 20 council houses. J. Donald Clerk, S. (Eastern Area), 2, Turf-st., Bodmin.

FEDERATED EMPLOYERS'
Insurance Association Ltd.
(non-tariff)
Head Office:
8, King St., Manchester
London Office:
23, Lawrence Lane, Cheapside, London, E.C.2
All Classes of Insurance Transacted
(Except Life and Marine)
The Leading Office for
Contract Guarantee Bonds

AUGUST 9.

Old Fletton U.D.C.—Exterior painting of 92 houses. T. Ashcroft, S. Dep. 10s.

AUGUST 10.

Worcester C.C.—External painting and repairs to Stanley-rd. schools. City Engineer, 22, Bridge-st. Dept. £1 1s.

AUGUST 12.

Middlesbrough C.B.—General property repairs.—Preston Kitchen, T.C.

AUGUST 17.

Rainford U.D.C.—External painting of 50 council houses. S., Council Offices.

AUGUST 22.

South African Union Tender and Supplies Board.—Air conditioning plant for New Magistrates' Court, Pretoria. Dept. of Overseas Trade, S.W.1. (Ref. T. 21013/40.)

SEPTEMBER 19.

South African Public Works Dept.—Seven electric passenger lifts, two electric goods lifts and three electric service lifts at the new G.P.O. Building at Cape Town. Dept. of Overseas Trade, S.W.1. (Ref. T. 21012/40.)

MATERIALS.

AUGUST 14.

Manchester T.C.—2,000 gallons of white line road paint and 500 gallons of white kerb paint. Highways Dept., Town Hall.

ENGINEERING, IRON AND STEEL.

AUGUST 8.

Pretoria.—Two cold rooms in Mental Hospital for Public Works Dept. at Pretoria. Dept. of Overseas Trade, S.W.1. (Ref. T. 20774/40.)

AUGUST 17.

Chapel-en-le-Frith R.D.C. — Charlesworth Water Supply. Providing, laying and jointing about 1,700 lin. yds. of 3-in. spun-iron pipes, collection of springs on moor, and construction of two small limestone filters, in parishes of Charlesworth and Chisworth. Brady and Partington, chartered civil engineers, Chapel-en-le-Frith. Dep. £5 5s.

ROAD, SEWERAGE AND WATER WORKS.

AUGUST 5.

East Riding E.C.—Tarmacadam work to certain council schools. County Architect, County Hall, Beverley.

AUGUST 6.

Redditch U.D.C. — Street making and sewers in connection with 100 houses. L. O. Wilkes., E. and S., Council House.

Sligo Board of Health.—Sewerage scheme at Ballymote. N. O'Dwyer, 6, Burlington-rd., Dublin. Dep. £5 5s.

AUGUST 7.

Stone R.D.C.—Contract No. 1 for Tittensor sewerage scheme. Willcox, Raikes and Marshall, engineers, 33, Great Charles-st., Birmingham, 3. Dep. £5 5s.

AUGUST 10.

Harrogate.—Excavating trenches, etc., in connection with the laying of 5,000 yards of 4 in. pipe. C. Bateman, general manager, Harrogate Gas Co., 48, James-st.

Wembley B.C.—Construction of a surface-water sewer in Brook-av., consisting of approximately 177 lin. yds. of 9 in. G.S. pipes and 61 lin. yds. of 12 in. concrete pipes, together with manholes and appurtenant works. B.E. and S., Town Hall. Deposit £1 1s.

AUGUST 12.

Bacup T.C.—5,000 cu. yds. of bulk excavation for the T.C. H. Guffogg, B. and W.E., Stubbylee Hall. Deposit £2 2s.

Cheshire C.C.—Construction of a diversion and widening of Ince-rd., Elton Green, nr. Ellesmere Port. G. E. Ashforth, County Surveyor, Watergate House, Watergate-st., Chester. Dep. £2 2s.

Kingsbridge and Salcombe Water Board.—Reinforced concrete clear water, wash-water and sedimentation tanks, brick chemical house and filter house, together with pipelines and incidental works, at Board's Waterworks, near South Brent. Lemon and Blizard, engineers, 24, Lockyer-st., Plymouth. Dep. £3 3s.

Wembley B.C.—Construction of approximately 724 lin. yds. of 9 in. dia. and 600 lin. yds. of 12 in. dia. G.S. pipe soil sewer, together with all manholes and appurtenant works, at Woodcock Hill. B.E. and S., Town Hall. Deposit £2 2s.

IRON AND STEEL SCRAP

MR. HERBERT MORRISON'S STATEMENT.

In the course of a statement on the position of iron and steel scrap issued last week, the Minister of Supply, Mr. Herbert Morrison, said: "I am satisfied that the steelworks are to-day receiving all their requirements of home-collected iron and steep scrap, and I am determined to ensure the continuance of this state of affairs, even if the demand of the works increases and conditions become more difficult. To-day every individual, institution and local authority which has scrap in its possession can be assured of a market. The National Federation of Iron and Steel Scrap Merchants guarantees to find a purchaser for all iron and steel scrap offered by the public or by public authorities.

"I have conferred with representatives both of the National Federation of Scrap Iron and Steel Merchants and of the Independent Scrap Iron, Steel and Metal Merchants' Association. I am satisfied that there is at present no hold-up caused by the arrangement whereby steelworks purchase scrap only from members of the Scrap Merchants' Federation. This Federation was formed before the war, one of the conditions of membership being willingness to forgo the highly profitable export markets available in Germany and elsewhere. It now performs a useful function in organising a difficult and heterogeneous trade. Merchants who are not members of the Federation can sell scrap to members at exactly the same price as the steelworks themselves pay for the quantity in question. If the Federation member makes any profit on such transactions he does so by building up and reselling larger consignments which for sound technical reasons bring a higher price. If a non-member sells to a member a quantity large enough to realise the maximum price per ton, the non-member receives this price and the merchant resells the quantity to the mill without profit. The metal goes direct from the non-member's store to the mill without additional handling. There is no 'rake-off' and no intermediary of any kind, whether a so-called agency firm or any other, operating between the merchant who is a member of the Federation and the steelworks; statements to the contrary are without foundation.

"Public authorities are now free to sell their scrap direct to the steelworks if they wish, provided it is in substantial quantities and has been suitably sorted. I counsel them, however, to make sure of their ability to deal with the many technical questions of handling and disposal that are involved.

"The view that I have formed is that the difficulties that may arise to cause possible obstruction later on in the free flow of scrap to the mills are not primarily difficulties of a commercial kind at all, but mainly questions of labour and transport. Both these matters are now having close attention. It is hoped to arrange very shortly for an additional supply of labour for sorting, breaking and transporting metal, and the Ministry of Labour has already taken steps to this end. The Merchants' Federation is moving to secure the setting up of a Conciliation Board to regulate labour conditions. Arrangements are also on foot to provide against any possible shortage in transport facilities.

"At the present time, I am assured that the mills are receiving their full requirements of scrap. Their intake is 50 per cent. above what it was at the beginning of the war, and the stocks in merchants' yards are actually lower than they then were. The problem is therefore to provide against future difficulty rather than to remove present obstacles. To this end we need plans for securing special forms of scrap on a large scale. A scheme for securing disused tram-rails is already in operation, and arrangements are being made by the Ministry for a comprehensive survey of all heavy scrap in the form of railings, derelict factories, pitheads and other obsolete structures."

CURRENT AND PROPOSED BUILDING WORK*

Bollington (Ches.).—Plans approved for alterations to "Cotton Tree" Inn, for Walker & Homfray's, Ltd., Eccles New-rd., Salford. Plans by own architectural staff.

Boston.—Farmers' Marketing Supply Co., Ltd., Cereal House, 58, Mark-la., London, E.C.3, have acquired land on Marsh-la. for erection of a potato drying factory.

Bournemouth.—T.C. passed: Plan, alterations, 637-9, Christchurch-rd., J. Sainsbury, Ltd.; rebuilding of belfry, East Cliff Congregational Church, Holdenhurst-road, the East Cliff Congregational Church; conversion into two flats, 36, Pinecliffe-avenue, Miss Baxter.

Brighton.—C.B. passed plans for alterations and additions to factory for Pullars Electric Co.

Brownhills.—U.D.C. propose erection of auxiliary fire stations. F. S. Harrison, engineer and surveyor.

Buckley, Flint.—U.D.C. propose conversion of premises into fire brigade headquarters. F. Bannister-Jones, surveyor, Council Offices.

Corby.—Northants S.J.C. to adapt premises and protect walls for report centre.

Coventry.—E.C. propose junior and infants' school in Ulverscroft-rd. D. E. E. Gibson, City Architect, 1a, Warwick-row.

Coventry.—T.C. to seek sanction to borrow £26,940 for gas mains and services for housing work.

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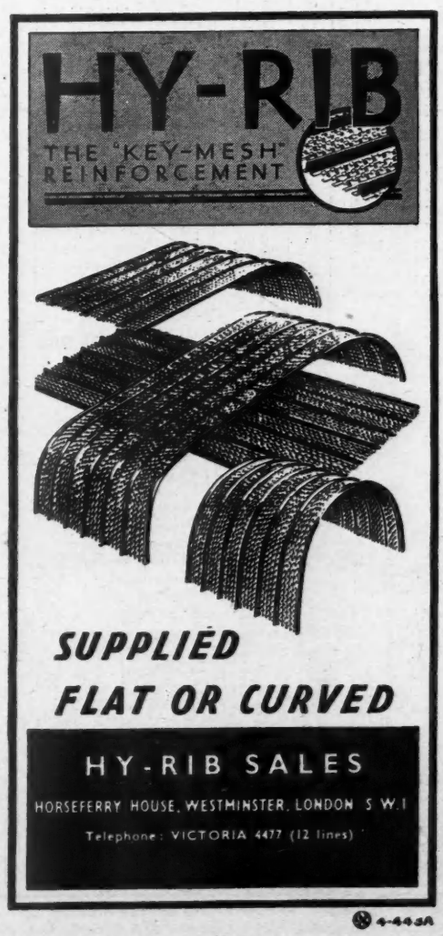
* See also List of Contracts Open.

**** In these lists every care is taken to ensure that information given is accurate and up to date, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced.**



4-443A

Derbyshire.—E.C. to acquire land at Holymoorside, Chesterfield, for erection of cottage homes for children.—E.C. have approved plans for alterations and extensions to Ashover Council School, cost £4,000. J. Harrison (A.), County Architect, St. Mary's Gate.

Gateshead.—T.C. approved of plans for alterations to "Albion Inn," High-st., for Bass, Ratcliffe and Gretton, Ltd., Cross House, Newcastle-on-Tyne.

Keighley.—T.C. approved plans for houses, Bradford-st., for Ernest Turner, Ltd.

Kingston-on-Thames.—T.C. approved plan submitted by Hodgsons' Kingston Brewery, Eden-st., for women's messroom and lavatories.

Lincolnshire (Holland Division).—S.J.C. propose additional lavatory accommodation at Spalding Police Station. W. M. Smith, County Architect, County Offices, Boston.

Liverpool.—Managers of Hillside-rd. Catholic School to adapt "Rose Bank," Knowsley, for school purposes.

Millom.—R.D.C. approved extension of Baystone Bank reservoir.

Newcastle-on-Tyne.—P.A.C. propose to adapt Kielder Castle as home for aged and infirm people. R. G. Roberts, 18, Cloth-market, City Architect.

Northampton.—C.B. approved: Two toll houses; electricity sub-station, Express Lift Co., Ltd.; extension to instrument factory, Painton and Co., Ltd.; extension of factory, G. Webb and Sons.

Oadby.—Leicestershire S.J.C. propose two police houses, to cost £1,500. W. Keay, County Architect, County Offices, Leicester.

Stockport.—Johnson & Sons, Ltd., Great Yarmouth, have acquired premises for adaptation for new factory.

Stoke-on-Trent.—T.C. passed following plans: F. W. James & Sons, Bryan-st., Hanley, reconstruction of abattoir; Y.M.C.A., Marsh-st., new premises; the Hilton Gravel Co., Ltd., Park Hall-rd., Longton, workshop, messroom and conveniences.

Sutton and Cheam.—T.C. to spend £200 for fencing war time allotments.

Tynemouth.—B.E., 19, Howard-st., North-st., North Shields, to prepare plans for adapting and fireproofing, etc., premises to be used as police muster and lecture rooms.

Wem.—Salop C.C. to adapt premises at "The Shubbery," as welfare centre.

West Riding.—E.C. propose improvement of following schools:—Askern, Sutton-rd.; Bentley, Kirkby-ave.; and Edlington Victoria. Improvements to be made to gymnasium, changing accommodation at boys' grammar school.

BUILDERS' BENEVOLENT INSTITUTION

ANNUAL GENERAL MEETING.

The 93rd annual general meeting of the Builders' Benevolent Institution was held at 47, Bedford-square, W.C.1, on Thursday, July 25.

In the absence of the President, Capt. H. A. Neal, on active service, the chair was occupied by Major L. Shingleton.

The annual report and the audited accounts of receipts and expenditure for the year ended July 6, 1940, were received and adopted.

It was decided to ask Mr. A. B. H. Colls to combine the duties of President and Hon. Treasurer for the period of the war.

A hearty vote of thanks was recorded to the retiring President for his valuable services to the Institution during the past year.

The following members of the Committee, who retired by rota, were re-elected:—Mr. A. H. Adamson, Mr. L. C. D. Hannen, Mr. H. T. Holloway, Mr. H. A. Neal, Mr. P. F. Parker, Major A. D. S. Rice. Mr. W. Boniface and Mr. F. W. Stratton were elected hon. auditors.

RATES OF WAGES IN THE BUILDING TRADE

AS AND FROM 1st JUNE, 1940

[Every endeavour is made to ensure accuracy, but we cannot be responsible for errors]

	Crafts-men.	Lab-ourers.
Aberavon	1/9	1/4½
Aberdare	1/9	1/4½
Abergavenny	1/9	1/4½
Abingdon	1/7½	1/3
Accrington	1/9	1/4½
Aldeburgh	1/5½	1/1½
Aldershot	1/7½	1/3
Alfreton	1/9	1/4½
Alnwick	1/8½	1/3½
Altrincham	1/9	1/4½
Amble	1/8½	1/3½
Amersham	1/7½	1/3
Ammanford	1/9	1/4½
Andover	1/7	1/2½
Ardingley	1/7	1/2½
Arundel	1/7	1/2½
Ascot	1/7	1/2½
Ashby-de-la-Zouch	1/9	1/4½
Ashford (Kent)	1/7	1/2½
Ashford (Middlesex)	1/9	1/4½
Ashington	1/8½	1/3½
Ashtead	1/9	1/4½
Ashton-under-Lyne	1/9	1/4½
Aylesbury	1/7	1/2½
Aylsham	1/6	1/2
Bagshot	1/7	1/2½
Banbury	1/7	1/2½
Barnsley	1/9	1/4½
Barnstaple	1/7	1/2½
Barrow-in-Furness	1/9	1/4½
Barry	1/9	1/4½
Basingstoke	1/7	1/2½
Bath	1/8½	1/3½
Batley	1/9	1/4½
Beaconsfield	1/7½	1/3
Beccles	1/5½	1/1½
Bedford	1/8½	1/3½
Berkhamsted	1/7	1/2½
Berwick	1/8½	1/3½
Beverley	1/9	1/4½
Bexhill-on-Sea	1/7½	1/3
Bideford	1/7	1/2½
Biggleswade	1/7	1/2½
Billericay	1/6½	1/2½
Birchington	1/7	1/2½
Birkenhead	‡§1/11	¶
Birmingham†	1/9	1/4½
Bishop Auckland	1/9	1/4½
Bishops Stortford	1/8	1/3½
Blackburn	1/9	1/4½
Blackpool	1/9	1/4½
Blyth	1/9	1/4½
Bognor Regis	1/7	1/2½
Bolton	1/9	1/4½
Bournemouth	1/8	1/3½
Bracknell	1/7	1/2½
Bradford	1/9	1/4½
Bradford-on-Avon	1/6	1/2
Braintree	1/7	1/2½
Brentwood	1/8½	1/3½
Bridgwater	1/7½	1/3
Bridlington	1/8½	1/3½
Brighouse	1/9	1/4½
Brighton	1/8	1/3½
Bristol	1/9	1/4½
Broadstairs	1/7	1/2½
Bromsgrove	1/8½	1/3½
Buckley	1/9	1/4½
Bungay	1/5	1/1½
Burnham-on-Crouch	1/5½	1/1½
Burnley	1/9	1/4½
Burslem	1/9	1/4½
Burton-on-Trent	1/9	1/4½
Bury	1/9	1/4½
Bury St. Edmunds	1/6½	1/2½
Buxton	1/8½	1/3½
Byfleet	1/7½	1/3
Cambridge	1/9	1/4½
Canterbury	1/7	1/2½
Cardiff	1/9	1/4½
Carlisle	1/9	1/4½
Carnforth	1/9	1/4½
Castleford	1/9	1/4½
Caterham	1/9	1/4½
Chard	1/6	1/2
Chatham	1/8	1/3½
Chelmsford	1/8½	1/3½
Cheltenham	1/8	1/3½
Chepstow	1/8½	1/3½
Chertsey	1/8	1/3½
Chester	1/9	1/4½
Chesterfield	1/9	1/4½
Chichester	1/7	1/2½
Chorley	1/9	1/4½
Cirencester	1/6½	1/2½
Clacton	1/7	1/2½
Clevelevs	1/9	1/4½
Clitheroe	1/9	1/4½
Cobham (Surrey)	1/8	1/3½
Colchester	1/8½	1/3½
Colwyn Bay	1/8	1/3½
Congleton	1/8½	1/3½
Coventry	1/9	1/4½
Cranbrook	1/7	1/2½
Cranleigh	1/7	1/2½
Crawley	1/7	1/2½
Crewe	1/8½	1/3½
Cromer	1/6	1/2
Crowborough	1/7	1/2½
Cuckfield	1/7	1/2½
Darlington	1/9	1/4½
Darwen	1/9	1/4½
Daventry	1/7½	1/3
Deal	1/7	1/2½
Denbigh	1/8	1/3½
Derby	1/9	1/4½
Devizes	1/6	1/2
Dewsbury	1/9	1/4½
Didcot	1/7	1/2½
Diss	1/5½	1/1½
Doncaster	1/9	1/4½
Dorchester	1/6½	1/2½
Dorking	1/7½	1/3
Dover	1/7	1/2½
Dovercourt	1/7	1/2½
Driffield	1/7½	1/3
Droitwich	1/8½	1/3½
Dudley	1/9	1/4½
Dunstable	1/7½	1/3
Durham City	1/9	1/4½
Eastbourne	1/8	1/3½
E. Glam. (Mon. Val.)	1/9	1/4½
East Grinstead	1/7	1/2½
Edenbridge	1/7	1/2½
Ely	1/6	1/2
Epping	1/9	1/4½
Exeter	1/8½	1/3½
Exmouth	1/7½	1/3
Fakenham	1/6	1/2
Falmouth	1/7½	1/3
Fareham	1/8	1/3½
Faversham	1/7	1/2½
Felixstowe	1/8	1/3½
Filey	1/7½	1/3
Fleetwood	1/9	1/4½
Flint	1/9	1/4½
Folkestone	1/7	1/2½
Frinton-on-Sea	1/7	1/2½
Frome	1/6	1/2
Gainsborough	1/8	1/3½
Gateshead	1/9	1/4½
Gillingham (Kent)	1/8	1/3½
Glossop	1/9	1/4½
Gloucester	1/8½	1/3½
Godalming	1/7	1/2½
Goole	1/9	1/4½
Gosport	1/8½	1/3½
Grantham	1/8	1/3½
Gravesend	1/8½	1/3½
Great Yarmouth	1/7	1/2½
Grimsby	1/9	1/4½
Guildford	1/7	1/2½
Guilsborough	1/7½	1/3
Halifax	1/9	1/4½
Hanley	1/9	1/4½
Harpenden	1/8	1/3½
Harrogate	1/9	1/4½
Hartlepools	1/9	1/4½
Harwich	1/7	1/2½
Haslemere	1/7	1/2½
Hastings	1/7	1/2½
Hatfield	1/8½	1/3½
Haywards Heath	1/7	1/2½
Hednesford	1/8½	1/3½
Hemel Hempstead	1/8	1/3½
Henley-on-Thames	1/7	1/2½
Hereford	1/7	1/2½
Herne Bay	1/7	1/2½
Hertford	1/8½	1/3½
Heysham	1/9	1/4½
Hitchin	1/8	1/3½
Hoddesdon	1/8½	1/3½
Holt (Norfolk)	1/5½	1/1½
Horley	1/7	1/2½
Horsham	1/7	1/2½
Horwich	1/9	1/4½
Huddersfield	1/9	1/4½
Hull	1/9	1/4½
Hunstanton	1/6	1/2
Huntingdon	1/6½	1/2½
Ilfracombe	1/7	1/2½
Ingatestone	1/7½	1/3
Ipswich	1/8½	1/3½
Isle of Thanet	1/7	1/2½
Isle of Wight	1/6½	1/2½
Keighley	1/9	1/4½
Kenilworth	1/9	1/4½
Kettering	1/9	1/4½
Kidderminster	1/8½	1/3½
King's Lynn	1/7	1/2½
Kirkham	1/9	1/4½
Knowle	1/8½	1/3½
Lancaster	1/9	1/4½
Leamington	1/9	1/4½
Leatherhead	1/8	1/3½
Leeds	1/9	1/4½
Leicester	1/9	1/4½
Leighton Buzzard	1/6	1/2
Letchworth	1/8	1/3½
Lewes	1/7	1/2½
Lichfield	1/8	1/3½
Lincoln	1/9	1/4½
Littlehampton	1/7	1/2½
Liverpool	‡§1/11	¶
Llandudno	1/8	1/3½
Llanelly	1/9	1/4½
London—		
12m. radius	*1/10½	1/5½
12-15 m. radius	*1/10	1/5
Long Eaton	1/9	1/4½
Longton	1/9	1/4½
Loughborough	1/9	1/4½
Louth	1/7½	1/3
Lowestoft	1/7	1/2½
Luton	1/8½	1/3½
Macclesfield	1/8½	1/3½
Maidenhead	1/8	1/3½
Maidstone	1/7½	1/3
Malvern	1/7½	1/3
Manchester	1/9	1/4½
Manningtree	1/6	1/2
Mansfield	1/9	1/4½
March	1/6	1/2
Margate	1/7	1/2½
Market Harborough	1/8	1/3½
Matlock	1/7½	1/3
Melton Constable	1/5½	1/1½
Melton Mowbray	1/8	1/3½
Merthyr	1/9	1/4½
Middlesbrough	1/9	1/4½
Middleton	1/9	1/4½
Middlewich	1/8½	1/3½
Milford Haven	1/7½	1/3
Morecambe	1/9	1/4½
Morley	1/9	1/4½
Mundesley	1/6	1/2
Nantwich	1/8½	1/3½
Nelson	1/9	1/4½
Newark-on-Trent	1/8½	1/3½
Newbury	1/7	1/2½
Newcastle-on-Tyne	1/9	1/4½
Newcastle-u.-Lyme	1/9	1/4½
New Forest	1/7	1/2½
Newmarket	1/7	1/2½
Newport, Mon.	1/9	1/4½
Newport Pagnell	1/7	1/2½
Northampton	1/9	1/4½
Norwich	1/9	1/4½
Nottingham	1/9	1/4½
Nuneaton	1/9	1/4½
Oakham	1/7½	1/3
Oldham	1/9	1/4½
Ormskirk	1/9	1/4½
Oxford	1/8½	1/3½
Oxted	1/7½	1/3
Paignton	1/8½	1/3½
Peterborough	1/8½	1/3½
Plymouth	1/9	1/4½
Pontefract	1/9	1/4½
Pontypridd	1/9	1/4½
Port Talbot	1/9	1/4½
Portsmouth	1/8½	1/3½
Preston	1/9	1/4½
Pulborough	1/7	1/2½
Ramsgate	1/7	1/2½
Reading	1/8½	1/3½
Redditch	1/8½	1/3½
Redhill	1/7½	1/3
Ripon	1/7½	1/3
Rochdale	1/9	1/4½
Rochester	1/8	1/3½
Rugby	1/9	1/4½
Saffron Walden	1/6	1/2
St. Albans	1/8½	1/3½
St. Helens	1/9	1/4½
St. Neots	1/6½	1/2½
Salisbury City	1/6½	1/2½
Salisbury Plain	1/8	1/3½
Sawbridgeworth	1/7½	1/3
Saxmundham	1/5½	1/1½
Scarborough	1/8½	1/3½
Scunthorpe	1/9	1/4½
Selby	1/9	1/4½
Sevenoaks	1/7½	1/3
Sheerness	1/7	1/2½
Sheffield	1/9	1/4½
Shipley	1/9	1/4½
Shoeburyness	1/8½	1/3½
Shoreham	1/8	1/3½
Shrewsbury	1/8½	1/3½
Sittingbourne	1/7	1/2½
Skegness	1/8	1/3½
Sleaford	1/7½	1/3
Slough	1/8	1/3½
Southampton	1/8½	1/3½
Southend-on-Sea	1/8½	1/3½
Southport	1/9	1/4½
South Shields	1/9	1/4½
Spalding	1/7	1/2½
Stafford	1/8½	1/3½
Staines	1/8	1/3½
Stamford	1/8	1/3½
Stevenage	1/8	1/3½
Stockport	1/9	1/4½
Stockton-on-Tees	1/9	1/4½
Stoke-on-Trent	1/9	1/4½
Stourbridge	1/9	1/4½
Stourport	1/8½	1/3½
Stowmarket	1/6	1/2
Stratford-on-Avon	1/8	1/3½
Stroud	1/8	1/3½
Sunderland	1/9	1/4½
Sutton Coldfield	1/9	1/4½
Swaffham	1/5½	1/1½
Swanage	1/7	1/2½
Swansea	1/9	1/4½
Swindon	1/7½	1/3
Tamworth	1/8½	1/3½
Taunton	1/7½	1/3
Tenterden	1/7	1/2½
Thames Haven	1/9	1/4½
Thetford	1/6½	1/2½
Thorpe Bay	1/8½	1/3½
Todmorden	1/9	1/4½
Tonbridge	1/7½	1/3
Torquay	1/8½	1/3½
Totnes	1/7	1/2½
Trowbridge	1/6	1/2
Truro	1/6½	1/2½
Tunbridge Wells	1/7½	1/3
Uppingham	1/7½	1/3
Uttoxeter	1/7½	1/3
Wakefield	1/9	1/4½
Walsall	1/9	1/4½
Walsden	1/9	1/4½
Walton-on-Naze	1/7	1/2½
Ware	1/8½	1/3½
Warminster	1/6	1/2
Warrington	1/9	1/4½
Warwick	1/9	1/4½
Wellingborough	1/8½	1/3½
Welwyn	1/8	1/3½
Welwyn Gar. City	1/9	1/4½
Wells (Norfolk)	1/5½	1/1½
West Bromwich	1/9	1/4½
Westcliff-on-Sea	1/8½	1/3½
Weston-super-Mare	1/8	1/3½
Weybridge	1/8	1/3½
Weymouth	1/7	1/2½
Whitby	1/8	1/3½
Whitstable	1/7	1/2½
Widnes	1/9	1/4½
Wigan	1/9	1/4½
Wigton	1/7½	1/3
Willington	1/9	1/4½
Wilmslow	1/9	1/4½
Winchester	1/7½	1/3
Windermere	1/7½	1/3
Windsor	1/8	1/3½
Wisbech	1/6½	1/2½
Witham	1/7	1/2½
Woking	1/7½	1/3
Wokingham	1/7	1/2½
Wolverhampton	1/9	1/4½
Woodbridge	1/6½	1/2½
Worcester	1/8½	1/3½
Workington	1/7½	1/3
Worksop	1/8½	1/3½
Worthing	1/7	1/2½
Wrexham	1/8½	1/3½
Wroxham	1/6½	1/2½
Wycombe	1/8	1/3½
Wymondham	1/6	1/2
Yeovil	1/7½	1/3
York	1/9	1/4½

* Painters 1d. less than other Craftsmen. † Plus 2d. per working day. ‡ Plasterers 1/11½.
¶ Tradesman's Labourers 1/5½. Navvies and General Labourers 1/4½.
§ Joiners, Plumbers, Bricklayers, Tilers and Masons receive 2/- per week or 4d. per day Tool Money.
For Building Trade Wages in Scotland, see page 126.

PRICES CURRENT OF MATERIALS *

Note: Owing to the exceptional circumstances which prevail at the present time prices of materials should be confirmed by inquiry. The prices for soft woods are for cash on delivery, and are subject to adjustment when the increased price of £22 per standard for national released stocks is finally fixed. At present linseed oil and genuine spirits of turpentine can only be supplied in cans in small quantities.

BRICKS, &c.

Delivered to site, City and Central Area, Full Lorry Loads.

	£ s. d.
Best Stocks	4 18 0
Second Hard Stocks	4 11 0

Per 1,000. Delivered at London Goods Stations.

2½ in. Phorpres.	King's Cross Station. per 1,000. s. d.	To sites in W.C. District. per 1,000 s. d.
Pressed bricks	49 0	55 0
Cellular bricks	49 0	55 0
Keyed bricks	51 0	57 0
Cellular Keyed bricks	51 0	57 0
Rustic bricks	69 0	75 0
Cellular Rustic bricks	69 0	75 0
Single Bullnose	69 0	75 0
White bricks	69 0	75 0
Sandfaced bricks	74 0	80 0

White Midhurst Facing Bricks (delivered London site) 3 12 6

Best blue Pressed Staffs. (London Stns.) 8 18 0

Do. Bullnose (London Stns.) 9 8 0

Blue Wire Cuts (London Stns.) 7 15 6

Best Stourbridge Fire Brick (London Stns.):—
2½ in. ..... 8 0 0 3 in. 9 15 0

GLAZED BRICKS. (London Stns.)

Best White Ivory and Salt Glazed Stretcher	26 0 0	D'ble Str'tch'rs	34 10 0
		D'ble Headers	31 10 0
		One side & two ends	35 10 0
Headers	25 10 0	Two sides & one end	36 10 0
Quoins, Bullnose and 4½in. Flats	32 10 0	Splays and Squints	34 0 0

Second Quality, £2 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours. Hard Glaze, £5 10s. extra over white.

PARTITION SLABS.

Delivered London Area.

"PHORPRES" HOLLOW PARTITION BLOCKS.

2" per yd. sup.	2 3	3" per yd. sup.	2 9
2½ " "	2 6	4" " "	3 1

CLINKER CONCRETE.

2" per yd. sup.	1 6	3" per yd. sup.	2 0
2½ " "	1 8	4" " "	2 4

CRANHAM TERRA COTTA.

2" per yd. sup.	3 0	3" per yd. sup.	3 8
2½ " "	3 6	4" " "	4 7

HEMPSTEAD—KEYED TWO SIDES.

12" x 9" x 2"	2 6	12" x 9" x 3"	3 0
12" x 9" x 2½"	2 9	12" x 9" x 4"	3 9

Per yard super d/d. Free on site, London.

SAND.

Thames Ballast	7 9	per yd. delivered 2 miles radius Paddington.
Pit Ballast	7 3	" "
Pit Sand	9 9	" "
Washed Sand	10 9	" "
¾ in. Shingle	8 0	" "
¾in. Broken Brick	12 0	" "
Pan Breeze	8 3	" "

CEMENT.

Best British Portland Cement. Standard Specification delivered London Area.

	£ s. d.
4 ton loads and upwards site ..... Per ton	2 4 6
1 ton to 4 tons site	2 7 6
Alongside Vauxhall in 80 ton lots	2 2 0
"Ferrocrete" Rapid Hardening Cement—	
4 ton loads and upwards site	2 10 6
1 ton to 4 tons site	2 13 6
Alongside Vauxhall in 80 ton lots	2 8 0

Stored in Reserved Bins at works. 1/6 per ton extra.

"Aquacrete" Water Repellent, "Blue Circle" cement, 30/- per ton extra or ordinary "Blue Circle" prices.

"Colorcrete" Nos. 1 and 2. Coloured Rapid Hardening Portland Cement	3 14 6
"Colorcrete" not rapid hardening, according to colour, from £7 to £15 10s. per ton.	
"Snowcrete" White Portland Cement	9 5 0
Super Cement (Waterproof)	3 14 6

NOTE.—Paper bags will be charged at the rate of 5/- nett per ton. Jute sacks charged 1s. 9d. nett each and 1/6 nett each allowed if returned to works within two weeks, in good condition.

Carriage will be paid by makers on returned empty jute sacks.

Roman Cement	£6 15	Keene's Cement, White	£5 17 6
Parian Cement	5 10	" " Pink	5 12 6

Cementone Colours for cement according to tints per cwt. from £2 16s. 0d.

PLASTER.

	£ s. d.		£ s. d.
Coarse, Pink	3 6 0	Sirapite, Coarse	3 10 0
" White	3 18 0	" Finish	3 18 0
Pioneer	3 10 6		
Super Carbo	2 7 6	4-ton loads and over London Area, paper bags free.	
Carbo Setting	2 12 6		
Best Ground Blue Lias Lime	1 17 6	Grey Stone Lime	2 2 0
		Chalk Lime	2 2 0
Granite Chippings	1 5 0	Hair per cwt.	2 7 6

NOTE.—Sacks are charged 1s. 9d. each, and credited 1s. 6d., if returned in good condition within three months, carriage paid.

Stourbridge Fireclay in sacks 37s. per ton at rly. dep.

STONE.

BATH STONE.—Delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube ..... s. d. 2 11½

BEER STONE—RANDOM BLOCK—

	s. d.
Free on rail at Seaton Station. per ft. cube	2 3
Delivered free on rail Nine Elms, S.R. "	3 1½

Selected approximate size one way, 1d. per cubic ft. extra, selected approximately three sizes or for special work, 3d. per cubic ft. extra.

PORTLAND STONE—

	s. d.
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, S. Rly., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 6
Do. do. delivered on road waggons as above stations, per ft. cube	4 6
White basebed, 3d. per ft. cube extra.	
NOTE.—1d. per ft. cube extra for every ft. over 20 ft. *average* and ¼d. beyond 30 ft.	

HOPTON-WOOD STONE—

F.O.R. Quarries, Wirksworth, Derbyshire, Random blocks from 10 ft. and over P.ft.cb.	14 0
Sawn two sides	22 6

HOPTON-WOOD STONE—

Sawn three or four sides	27 9

YORK STONE, BLUE—*Robin Hood Quality.*

Delivered at any Goods Station, London.

6 in. sawn two sides landings to sizes (under 30 ft. super) per ft. super	5 6
6 in. rubbed two sides, ditto "	6 3
3 in. sawn two sides slabs (random sizes) "	2 7
2 in. to 2½ in. sawn one side slabs (random sizes) (paving) "	1 8½
1½ in. to 2 in., ditto "	1 4½

HARD YORK—

Delivered at any Goods Station, London.

Scrappled random blocks. per ft. cube	6 10
6 in. sawn two sides landings to sizes (under 40 ft. super) per ft. super	5 7½
6 in. rubbed two sides, ditto "	6 9
4 in. sawn two sides slabs (random sizes) "	3 5
3 in. ditto ditto "	2 8
2 in. self-faced random flags Per yd. super	8 9

CAST STONE.

Delivered in London are in full van loads, per ft. cube; Plain, 7s. 6d. Moulded, 8s. 6d. Sills, 10s. 0d.

HARD WOOD.

1 INCH AND UP THICK.

Average price for prime quality.	£ s. d.
Dry Austrian Wainscot, per ft. cube	0 17 0
Dry American and/or Japanese Figured Oak, per ft. cube 10 6 to	0 13 0
Dry American and/or Japanese plain Oak, per ft. cube	0 11 6
Dry sq. edged Honduras Mahogany, per ft. cube	0 15 0
Dry log-cut Honduras Mahogany, per ft. cube 12 6 to	0 16 0
Dry Cuba Mahogany, per ft. cube	0 18 0
Dry Teak, per ft. cube	0 14 0
Dry American Whitewood, per ft. cube	0 10 6
Dry Australian Walnut, per ft. cube	0 19 0
Dry Queensland Silky Oak, per ft. cube	0 12 6
Dry African Mahogany, per ft. cube	0 10 0
Dry African Whitewood, per ft. cube	0 8 0
Dry English Wainscot Oak, per ft. cube	0 16 0
Best Scotch Glue, per cwt.	3 0 0
Liquid Glue, per cwt. 4 7 0 to	5 10 0

SOFT WOOD.

MERCHANTABLE BRITISH COLUMBIAN PINE.

	Minimum. £ s. d.	Maximum. £ s. d.
Scantlings in imported sizes, 2in. by 3in. to 4in. by 11in.	43 10 0	53 0 0

Having secured the Contract— What about the Steel Scaffolding!

For the lowest Prices apply to the Oldest Firm in The Scaffolding Trade.

STEPHENS & CARTER LTD.

The British Steel Scaffolding Co.

731-761, HARROW RD., N.W.10.

Telephone No. Ladbroke 1191 (6 lines).

PLANED BOARDS.

PRIME CLEAR BRITISH COLUMBIAN PINE.

	Per standard. £ s. d.
1in. by 11in. } 1in. by 9in. }	67 10 0
	Per square. s. d.
1in. plain edge flooring	53 0
1¼in. ditto	66 6
1in. tongued and grooved	53 0
1¼in. ditto	66 6

MATCHING.

	Per square. s. d.
⅜in.	37 6
½in.	42 0
1in.	55 0

SLATES.

First quality slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.

	£ s. d.		£ s. d.
24 by 12	31 13 6	18 by 10	16 15 0
22 by 12	26 12 0	18 by 9	15 7 6
22 by 11	23 18 6	16 by 10	14 11 6
20 by 12	23 8 0	16 by 8	11 10 0
20 by 10	21 0 0		

TILES.

Delivered at London rate stations in full truck loads of not less than 6 tons. ..... Per 1,000 f.o.r. London

Best machine-made tiles from Broseley or Staffordshire district	£4 10 0
Ditto hand-made ditto	5 7 6
Ornamental ditto	5 12 6
Hip and valley tiles (per dozen) Hand-made	0 9 0
Hip and valley tiles (per dozen) Machine-made	0 8 6

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—

	£ s. d.
R.S. Joists, cut and fitted	£19 5 0
Plain Compound Girders	21 15 0
" " Stanchions	24 5 0
In Roof Work	28 15 0

NOTE.—These prices are for standard pieces and no special pieces of an awkward nature.

MILD STEEL ROUNDS.—To London Stations, per ton.

Diameter.	£ s. d.	Diameter.	£ s. d.
⅜ in.	19 15 0	⅝ in. to ½ in.	18 5 0
½ in.	18 15 0	⅝ in. to 2¼ in.	17 15 0

WROUGHT TUBES AND FITTINGS.

Deliveries from works.

Deliveries from London stock further 2½% gross.

	Tubes. ½"/6" %	Tubulars. ½"/6" %	Fittings. 10/17 19/24 %	Flanges. ½"/2" %	2½"/6" %
Light weight	55½	—	48	51½	58
Heavy weight	48½	48½	40½	41½	50½
Gavl.lightweight	44½	—	39½	40½	49½
Galv.heavyweight	35½	35½	31½	30½	41½

Tubes and tubulars sizes ½"/½" inclusive, charged extra of 5% less gross.

Fittings. Figs. 25/34 5% less gross discount.

Terms.—Nett cash end of month following date of invoice. Carriage paid on lots of £10 nett value and over.

C.I. HALF-ROUND GUTTERS—London Prices ex Works.

per yd. in 6 ft. lengths.	Gutters.	Angles and Stop Nozzels.	Ends.
3 in.	1/3½	1/0½	4d.
3½ in.	1/5	1/2½	4d.
4 in.	1/5	1/3½	5½d.
4½ in.	1/6	1/6	6½d.
5 in.	1/9½	1/7½	7½d.

O.G. GUTTERS.

3 in.	1/8½	1/5½	4½d.
3½ in.	1/10½	1/5½	5½d.
4 in.	1/10½	1/6	6½d.
4½ in.	1/11½	1/9	7½d.
5 in.	2/5½	2/-	9d.

RAIN WATER PIPES, &c.

Per yd. in 6 ft.	Pipe.	Bends, stock angles.	Branches. stock angles.
2 in.	1/11½	1/3½	1/11½
2½ in.	2/0½	1/6	2/3½
3 in.	2/5	1/10½	2/9½
3½ in.	2/10½	2/3	3/3
4 in.	3/3½	2/8½	3/11½

NETT PRICES.

Tonnage allowance—4-ton lots, 5 per cent. 2-ton lots, 2½ per cent.

L.C.C. COATED SOIL PIPES—London Prices, ex Stock.

	Pipe.	Bends, stock angle.	Branches. stock angles
2 in. per yd. in 6 fts.	3/3½	2/3½	2/9½
2½ in. "	3/11½	2/6½	3/6
3 in. "	4/2½	2/9½	4/2½
3½ in. "	4/3½	3/6	4/10½
4 in. "	4/8½	3/11½	5/7½

L.C.C. COATED DRAIN PIPES.—London Prices, ex Stock.

	Pipe.	Bends, stock angles.	Branches. stock angles
3in. per yd. in 9ft. lengths	5/1	5/11½	9/5½
cwt. qr. lbs.			
4 in. " 1 1 20	7/6	6/9	11/10½
5 in. " 1 2 22	9/1	12/2	18/5
6 in. " 2 0 6	10/9	14/0½	23/0

Gaskin for joining 65/- per cwt.

* The information given on this page has been specially compiled for THE BUILDER, and is copyright. The aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information. Prices are subject to 2½ per cent. cash discount.

PRICES CURRENT OF MATERIALS—(*contd.*)

	Per ton basis in London. £ s. d.		£ s. d.
IRON.—Staffordshire Crown, Merchant quality	16 12 6	to	17 17 6
IRON—Staffordshire Marked Bars	19 10 0	to	21 10 0
Mild Steel Bars	17 8 6	to	18 18 6
Mild Steel Hoops	19 2 6	to	19 12 6
	Ex Merchant's Stock, per ton (two-ton lots).		
Soft Steel Sheets, C.R. and C.A.—	£ s. d.		£ s. d.
20 gauge	21 10 0	to	23 17 6
24 gauge	21 15 0	to	23 12 6
26 gauge	22 10 0	to	24 7 6
Galvanised Corrugated Sheets, 6 ft. to 9 ft.—			
20 gauge	23 11 3	to	24 16 3
24 gauge	24 1 3	to	25 6 3
26 gauge	25 6 3	to	27 1 3
Galvanised Flat Sheets, C.R. and C.A.—			
20 gauge	25 1 3	to	26 18 9
24 gauge	25 11 3	to	27 8 9
26 gauge	26 16 3	to	28 13 9
	Per ton. £ s. d.		£ s. d.
Cut Nails, 3 in. and up	23 10 0	to	25 0 0

ALL NETT.

METAL WINDOWS.—Standard sizes, suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1s. 4d. to 1s. 7d. per foot super.

COPPER.

		s. d.
Seamless Copper tubes (basis)	per lb.	1 1
Strong sheet	"	1 3
Thin	"	1 4
Copper nails	"	1 3
Copper wire	"	1 3

PLUMBERS' BRASS WORK.

Delivered in London.
Stamped by Met. Water Board.

CRUTCH HEAD SCREW DOWN BIB COCKS FOR IRON. EASY CLEAN.

½ in. ¾ in.
29/- 45/- per doz.

CHROMIUM PLATED TOILET SCREW DOWN BIB COCKS FOR IRON. EASY CLEAN.

½ in. ¾ in.
40/— 59/- per doz.

SCREW DOWN STOP COCKS FOR IRON.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
31/- 44/6 75/- 175/- 250/- 396/- per doz.

SCREW DOWN STOP COCKS WITH TWO UNIONS FOR LEAD.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
42/6 65/- 102/- 195/- 210/- 510/- per doz.

DOUBLE NET BOILER SCREWS.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
7/6 9/- 14/- 24/- 37/6 54/- per doz.

HEAVY CROYDON BALL VALVES.

½ in. ¾ in. 1 in. 1¼ in. 1½ in.
33/6 55/6 85/- 165/- 237/- per doz.

CAPS AND SCREWS.

1¼ in. 1½ in. 2 in. 3 in. 3½ in. 4 in.
9/- 11/- 16/6 29/- 42/- 45/- per doz

BRASS FERRULES OF SLEEVES.

1½ in. 2 in. 3 in. 3½ in. 4 in.
9/6 11/6 20/6 26/- 37/- per doz.

DRAWN LEAD TRAPS WITH BRASS CLEANING SCREWS.

	1½ in.	1½ in.	2 in.	3 in.
8 lb. Lead P.	17/6	23/-	32/6	66/6 per doz.
8 lb. Lead S.	21/6	27/6	39/6	73/- per doz.

SOLDER.—Plumbers, 1/2. Tinmen's, 1/4. Blowpipe, 1/6 per lb.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil, in drums	per gallon	0 5 4
Boiled " " in drums	"	0 5 7
Turpentine, in drums (10 gals.)	"	0 5 3
Genuine Ground English White Lead, per ton (In not less than 5-cwt. casks). Extra for 1-cwt. kegs over 5-cwt. casks is 2/9 cwt.		61 0 0
GENUINE WHITE LEAD PAINT "Father Thames," "Nine Elms," "Park," "Supremus," "St. Paul's," "Morganswyte," "Polacco," "J" Brand, and other best brands (in 14 lb. tins) not less than 5-cwt. lots per ton delivered		£ s. d. 83 10 0
Red Lead, Dry (packages extra)	per ton	52 0 0
Best Linseed Oil Putty (1 ton lots)	per cwt.	0 17 1½
Size, XD quality	fkn.	0 3 6

Turpentine substitute can be obtained and prices vary according to the quality from 2/9 gallon upwards.

VARNISHES, &c.

		Per gallon.
Oak Varnish	Outside	0 14 0
Fine do.	"	0 16 0
Fine Copal	"	0 18 0
Pale Copal	"	1 0 0
Pale Opal Carriage	"	1 4 0
Best do.	"	1 12 0
Floor Varnish	Inside	0 18 0
Fine Pale Paper	"	0 18 0
Fine Copal Cabinet	"	1 2 0
Fine Copal Flatting	"	1 0 0
Hard Drying Oak	"	0 18 0
Fine Hard Drying Oak	"	0 19 6
Fine Copal Varnish	"	1 0 6
Pale do.	"	1 12 0
Best do.	"	1 2 6
Best Japan Gold Size		1 12 6
Best Black Japan		0 10 0
Oak and Mahogany Stain (water)		0 12 0
Brunswick Black		0 7 6
Berlin Black		0 14 0
Knotting (patent)		0 15 0
French and Brush Polish		0 12 0
Liquid Dryers in Terebene		0 9 0
Cuirass Black Enamel		0 7 0

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

ORDINARY GLAZING QUALITY (O.Q.) AND SELECTED GLAZING QUALITY (S.Q.).

PER FOOT SUPER.

In sizes not exceeding 80 in. long or 48 in. wide or 110 united inches.

	O.Q.	S.Q.
18 oz. in 300 ft. cases	2½d.	2½d.
24 oz. " 200 ft. "	3½d.	4d.
26 oz. " 200 ft. "	3½d.	4½d.
32 oz. " 200 ft. "	5½d.	6½d.
24 oz. " 300 ft. "	3½d.	3½d.
26 oz. " 300 ft. "	3½d.	4½d.
32 oz. " 300 ft. "	5½d.	6½d.
18 oz. Obscured Sheet		3½d.
24 oz. Obscured Sheet		4½d.
Fluted, 21 oz.		9d.
Enamelled, 18 oz.		5½d.
" 24 oz.		6½d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE AND FIGURED CATHEDRAL, ETC., IN CUT SIZES.

	Per ft.
Rolled plate, ¼ in.	5½d.
Rough cast double rolled, ¼ in.	6½d.
Rough cast double rolled, ½ in.	6½d.
Figured rolled, and Cathedral, white	6½d.
Figured rolled and Cathedral, tinted	9½d.
Rolled Sheet	6d.
Reeded, Broad Reeded, Cross Reeded and Chevron Reeded, ¼ in. thick	0 10½

Rolled plate is the same price as rough cast double rolled.

	Per ft. s. d.
Wire Rolled, ¼ in. thick	0 9½
Wired Cast, ¼ in. thick	0 9½
Georgian Wired Cast	0 10
"Calorex" Sheet, 21 oz.	2 6
" " 32 oz.	4 0
" Cast, ¼ in. thick	0 10
" " 5/16 in. thick	1 0
" " ⅜ in. thick	1 2
Non Actinic Glass, ¼ in. thick	0 9½
" " 5/16 in. thick	1 0
" " ⅜ in. thick	1 2

"VITA" GLASS.

	Per ft. s. d.
"Vita" Plate Glass, about 1/8 thick:	
To 7 ft. super	5 0
Over 7 ft. super	7 6
"Vita" Sheet Glass, about 18/20 oz.	2 0
Cathedral "Vita" Glass:	
¼" thickness	2 0
3/16" "	3 0
1/16" Georgian Wired "Vita" Glass	3 6

LEAD, &c.

(Delivered in London.)	Per ton. £ s. d.
LEAD.—Sheet, English, 4 lb. and up	34 10 0
Pipe in coils	34 0 0
Soil pipe	39 10 0
Compo pipe	41 5 0

NOTE.—Country delivery, 20/- per ton extra, lots under 3 cwt. 4/- per cwt. extra and over 3 cwt. and under 5 cwt., 2/6 per cwt. extra. Cut to sizes, 4/- per cwt. extra.

Old lead, ex London area, at Mills ..... per ton £19 10 0

BUILDING TRADE WAGES IN SCOTLAND

Following are grade rates authorised by the Scottish N.J.C. from February 1. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur.

Grade Classification	A	A¹	A²	A³	B	B¹
Craftsmen	1/9½	1/9	1/8½	1/8	1/7½	1/7
Labourers	1/4½	1/4	1/3½	1/3½	1/2¾	1/2½

Aberdeen	A	Dumfriesshire	A²	Inverness	*	Perthshire	A²
Ayrshire	A	Dundee	A	Inverurie	A²	Peterhead	A²
Banff	B	Dunoon	A	Kincardineshire	A²	Renfrewshire	A
Berwickshire	A²	East Fife	A	Kinross-shire	A	Rothesay	A
Bridge of Allan	A	East Lothian	A	Lanarkshire	A	Roxburghshire	A²
Broughty Ferry	A	Edinburgh	A	Midlothian	A	St. Andrews	A
Clackmannanshire	A	Fifeshire	A	Monifieth	A	Selkirkshire	A²
Doune	A	Forfarshire	A²	Moray and Nairn	B	Stewartry	A²
Dunblane	A	Glasgow	A	Newport	A	Stirlingshire	A
Dumbartonshire	A	Greenock	A	Peeblesshire	A²	Stornoway	A²
Dumfries	A²	Hamilton	A	Perth	A	Tayport	A
						West Lothian	A

* This town has its own rates: Masons, 1/7½; Carpenters, 1/7½; Slaters, 1/7½; Plumbers, 1/8; Plasterers, 1/8½, but 1/9 is paid owing to the scarcity at present; Painters, 1/7½ and Labourers, 1/3.

The information given in this table is copyright. Rates of wages in England and Wales are given on page 124.

SLIDING DOOR GEAR
Phone: WATERLOO 4311 (3 lines)
British Made.
Phone: WATERLOO 4311 (3 lines)
MECHANICAL PERFECTION
COBURN SYSTEM
Latest Catalogue on Request.
THE BRITISH TROLLEY TRACK CO., LTD.
Orange Street, S.E.1.
Agents Everywhere.

THE SCOTTISH BUILDER

NEW BUILDINGS

GLASGOW.—FLATS.—Plans prepared for service flats. The architect is Mr. J. S. Boyd, 206, Bath-st.

HARTHILL.—HOUSES.—Plans are to be prepared for 16 houses. The architect is Mr. S. McColl, Lanarkshire County Housing Architect, Hamilton.

PERTH.—ADDITIONS.—The Dean of Guild Court has approved the following plans: Perth and Kinross Joint County Council to erect additions to the County Infectious Diseases Hospital, Burghmuir.—Thomson, Craik & Co., Ltd., to erect a store in Glover-st.

RUTHERGLEN.—HOUSES.—The Corporation is to erect 38 houses. The architect is Mr. Hugh Inglis, Burgh Surveyor.

UDDINGSTON.—PREMISES. — From plans by their own architects, the Uddingston Co-operative Society, Ltd., are to erect new business premises.—Plans prepared by Messrs. Bryden, Strang and Co., architects and civil engineers, 40, St. Vincent-place, St. Vincent-st., Glasgow, for new business premises for the Co-operative Society, Ltd.

Restoration of Exeter Chapter House.

THROUGH the generosity of the Friends of Exeter Cathedral, the Chapter House has been restored to its ancient dignity by the removal of a screen and gallery, together with a fireplace and a deal floor, features which were introduced in the early part of the nineteenth century. The stone benches surrounding the chamber have been restored, the roof repaired, and the floor, with its fourteenth-century tiles, relaid, new heating and lighting introduced, and the ventilation improved.

TRADE NEWS

"Gyproc" and the Paper Shortage.

In order to conserve the national paper supplies, Messrs. Honeywill & Stein, Ltd., announce that, in co-operation with other plaster-board manufacturers, they have met the request of the Paper Controller to substitute a grey-faced paper for the ivory-faced paper used in their wallboard. Both papers will therefore be similar in quality to the grey paper at present in use. We understand that in all other respects the quality of "Gyproc" wall and ceiling board will be rigidly maintained. Customers are warned that during the transition period it may be necessary, in some cases, to send grey- and ivory-faced board in the same consignment.

Window Replacement Fabric.

If bombing should become widespread and intensified, the problem of broken windows and their replacement will probably become an urgent one. In some situations and for some purposes it may be necessary to replace glass with glass, but in many cases it would be unnecessary and perhaps undesirable to do this, particularly where damage is likely to be repeated at short intervals of time. The need has therefore arisen for some suitable and economical substitute that can be quickly fixed, and this is now supplied in a material called "'Steadoglass," which has just been placed on the market. This is a translucent fabric treated with linseed oil for resistance to sun, wind and rain, and having a high degree of light penetration. It is available in 36-in. and 50-in. widths, a double line of stitching enabling it to be used for any width of window. It is fixed with clout nails or large tacks through a simple turning-in at the edge of about half an inch. The material is supplied in 30-yard rolls, which occupy little space and can be conveniently stored against an emergency. The manufacturers are Messrs. Storeys of Lancaster, whose London address is 23, Lawrence-lane, Cheapside, E.C.2.

NEW BUILDINGS IN LONDON

BEDDINGTON.—BUILDING.—The T.C. has approved the following plans:—Mr. F. Sutton-Smith, L.R.I.B.A., architect, Midland Bank Chambers, Wallington, on behalf of Messrs. H. Hendra, Ltd., for extension of trimming and pattern shops, and E. Bates and W. G. Sinning, architects, 27, Queen Victoria-st., E.C.4, for United Dairies, Ltd., internal alterations at the United Dairies' premises at Osmond Gardens.

BROMLEY.—WORKS EXTENSIONS.—Plans submitted to Lewisham B.C. by Mr. R. J. Ward, F.S.I., F.I.A.A., 15, Central Chambers, Ealing Broadway, W.5, for extension to a factory in Bromley. Messrs. Whyatt (Builders), Ltd., 1, Ravenstone-street, S.W.12, are the contractors.

DAGENHAM.—DEPOTS.—Plans have been prepared by the Surveyor to Dagenham T.C. for depots at St. Chad's and Old Dagenham Parks. Tenders are to be invited from selected firms.

DAGENHAM.—BUILDINGS.—The Housing, Town Planning, etc., Committee of Dagenham Borough Council have approved the following plans:—May and Baker, Ltd., covered store at factory, Rainham-rd.; Briggs Motor Bodies, Ltd., additions to first aid department, Chequers-la.; May and Baker, Ltd., lean-to building, works building and temporary cloakroom at factory, Rainham-rd.

DEPTFORD.—BUILDING.—Plans for a one-storey building, comprising two drying kilns, have been approved by Deptford B.C. for Messrs. Calders, Ltd., Plough Way. The applicants were Messrs. Kemp and Co., builders, "Lyonesse," Main-road, Sidcup.

FOREST HILL.—BANK ADDITIONS.—Barclay's Bank have submitted plans to Lewisham B.C. for additions to 197, Stanstead-road, Forest Hill.

WEST HAM.—BUILDINGS.—B.C. approved following plans:—Extension of tobacco warehouse adjoining No. 164, Barking-rd. (submitted by W. M. Edwards); extension to factory, High-st., Plaistow (A. Foster); and alterations and additions to factory buildings, No. 8 and 42, Carpenters-rd. (Ley, Colbeck and Partners).

TENDERS

The Editor welcomes authentic information for this feature from architects, surveyors or contractors. Items should reach 4, Catherine-street, Aldwych, W.C.2, not later than Wednesday morning.

Tenders for A.R.P. work will be found under A.R.P. Schemes."

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government departments.*

Bath.—Alterations to the kitchen and blinds for the laboratory at West Central School, for T.C. *Toogood & Bath, Ltd. £139 10s.

Bath.—Structural alterations to a sub-station, for T.C. *T. J. Amery & Sons, Ltd. £185.

Bishop Auckland.—Pointing of walls at Bishop Auckland Institution for Durham C.C.:—*G. Stevenson, Bishop Auckland, £205 (in lieu of tender withdrawn).

Boston.—Outside painting at Carlton-rd. school for E.C. T. C. Cockrill, B.S. *F. Langstaff, Bargate End, Boston, £53.

Carmarthen.—Reconstruction of Nolton House, Francis-ter., and conversion of caretaker's house at Pentrepoeth schools into boys' conveniences for E.C. G. L. Ovens, B.E. & S.

E. J. Davies, 15 per cent. on cost			
I. Richards & Son	£878	8	7
D. G. Lewis	814	0	0
D. Davies & Son	725	5	0
Enoch Davies	723	10	0
*H. B. Thomas	717	16	0

(All of Carmarthen.)
(* Accepted subject to approval of Board of Education.)

Chester.—Office accommodation, conveniences, messroom and storeroom at Blacon Cemetery for T.C. †James Parker, £3,520.

Chesterfield.—Additional cooling hall and alterations to the Corporation abattoir for T.C. †A. Mason (Contractors), Ltd., Sutton-rd., Mansfield, £3,871.

Chesterfield.—For painting at four buildings, for T.C. Mr. W. S. Wilson, B.S. *Thos. Fox, 570, Chatsworth-rd., Chesterfield.

Clowne.—Senior school for girls, for Derbyshire E.C. J. Harrison, A.R.I.B.A., County Architect. *Adam Eastwood & Sons, Ltd., Burns-la., Warsop, near Mansfield. £24,058.

Corby.—40 houses on the Oakley-rd. site. *A. C. Whiting, Northampton, £18,958.

DON'T TENDER UNSUCCESSFULLY

SECURE CONTRACTS WITH

THE STEEL SCAFFOLDING CO., LTD.

"BIG BEN TOWERS." 23, OATLANDS DRIVE, WEYBRIDGE, SURREY. 'Phone: Walton 614 and 615.

Driffield.—Laying approx. 900 lin. yds. of water mains, valves, etc., for Driffield Water Co. Fairbank & Son, consulting engineers, Barclays Bank-chams., St. Helen's-s., York. *Squires & Sons, Ltd., Portholme Works, Selby.

Friern Barnet.—For external decoration of 30 council houses for T.C. *V. A. Howard.

Glasgow.—Alterations and extensions to factory of MacFarlane, Lang and Co., Ltd. J. Monro and Son, architects, 307, West George-st. Currie & Brown, quantity surveyors, Holland-st.:—Excavation, brick and mason: *P. & W. Anderson, Ltd., Glasgow.

Glasgow.—Offices, etc., for the Blythswood Shipbuilding Co., Ltd., Scotstoun. H. and D. Barclay, architects and quantity surveyors, 221, West Regent-st.:—Excavation, brick and mason: *P. & W. Anderson, Ltd., Glasgow.

Glasgow.—Additions to works for Melvin and Gillespie, Ltd.:—*Cowieson, Ltd., Glasgow.

Lancashire.—Works for the C.C. S. Wilkinson, F.R.I.B.A., County Architect, Preston:—

Equipment at the Halsnead Council school, Whiston. *Wake & Dean, Ltd., Steam Works, Yatton, Bristol. £200 7s.

Equipment for extensions at the Bacup and Rawtenstall grammar school. *T. Bradford & Co., Crescent Ironworks, Salford, 5. £1,118 9s.

Electrical installations at the Darwen Municipal Technical Evening Institute. *S. Dickinson, Ltd., 24, Fountain-st., Manchester, 2. £1,080.

Alterations to kitchen and additional equipment at the Worsley Walkden senior council school. *Brooks Bros., Blackhorse-st., Farnworth, near Bolton. £177 8s.

Equipment for Baines' grammar school extensions at Poulton. *T. Bradford & Co., 16, Deansgate, Manchester. £388 13s.

Leeds.—Metal windows for Belle Isle junior infants' school, for E.C.:—*Doodson and Bain, Ltd., £1,197.

Lewisham.—For erection of 14 group domestic shelters, for T.C.:—

Walker Clinging & Co.	£1,386	0	
Campbell & McGill	1,346	10	
W. Banks	1,345	0	
Henry Kent, Ltd.	1,272	0	
Powell, Driver & Foster	1,235	0	
*Horace Newby, Ltd.	1,224	0	

Lewisham.—For erection of 13 group domestic surface shelters, for B.C.:—

Walker, Clinging & Co. ...	£1,432	0	0
Henry Kent, Ltd.	1,394	0	0
Powell, Driver & Foster ...	1,324	3	7
Campbell & McGill	1,302	2	0
Wates, Ltd.	1,258	0	0
*Horace Newby, Ltd.	1,187	0	0

Liverpool.—For conversions of women's recreation room at Fazackerley Emergency Hospital to an X-ray unit. *Rimmer Bros. (Liverpool), Ltd. £845. (Subject M.H. sanction.)

London (Air Ministry).—The Directorate of Contracts of the Air Ministry has placed the following contracts for the week ended July 27:—

Heating work: Norris Warming Co., Ltd., London.

Electrical work: Bower Engineering Works (Electrical and General), Ltd., London; Electrical Installations, Ltd., London.

Civil Engineering: Tarslag, Ltd., Wolverhampton.

Ventilation work: Frigidaire, Ltd., London.

Heating work: G. N. Haden & Sons, Ltd., London.

Electrical work: W. T. Henley's Telegraph Works, Co., Ltd., Westcott, Dorking.

Civil Engineering: Tarmac, Ltd., Wolverhampton.

Heating work: Comyn Ching & Co. (London), Ltd., London.

Building work: Gee, Walker & Slater, Ltd., London; J. Gerrard & Sons, Ltd., Manchester; Kent and Sussex Contractors, Ltd., Erith, Kent.

Civil Engineering: Sir Robt. McAlpine & Sons, Ltd., Liverpool.

Building work, etc.: Demolition and Const. Co., Ltd., Croydon.

¶**London (War Dept.).**—Contracts placed for week ending July 20 :—

Lanarkshire, building work, Speirs, Ltd., 257, West George-st., Glasgow.

Ayrshire, building work, Wm. Paton & Sons, Ltd., 19, Kyle-st., Ayr.

Warwickshire, hutting, T. J. Hartwell & Son, Stratford-on-Avon.

Merionethshire and Carnarvonshire, constructional work, Alun Edwards, Ltd., Cefn-y-Bedd, Wrexham.

Herefordshire, miscellaneous work, W. G. Northcott, Ltd., Whipton, Exeter.

Lancashire, hutting, Nicholson & Wright, Cable-st., Lancaster.

Kent, building work, New Ideal Homesteads, Ltd., Carlton-rd., Erith, Kent.

Kent, hutments, W. P. Woodgate, High Halden, Kent.

Essex, building work, S. Cronin & Sons, Britannia-rd., Warley, Essex.

Derbyshire, building work, E. Wood & Sons, Ltd., 70, Park-st., Derby.

Manchester.—Conversion of disused hospital into factory. *J. Bonnell, 10, Holly-rd., Swinton.

Manchester.—Additions to offices to works, Collyhurst-rd., for Packing Materials Association, Ltd. F. Hill, architect, 11, Tenterden-st., Bury. *James Greenwood, Ltd., Huntley Brook Saw Mills, Bury.

Manchester.—Roof to factory, for T.C. Thompson & Sons, Ltd., Buxton-st. B. Pendleton, architect, 16, Brazennose-st. *David Walton & Co., Ltd., Clarendon-rd., Pendleton.

Manchester.—For heating "B" Block, Park House, Withington Hospital, for T.C. : *Saunders & Taylor, Trafford Park.

Newtownards.—Reconstruction of existing building forming extension to nurses' home. R. Ferguson & S. M'Ilveen, architects, 36-37, Scottish Provident-bldgs., Belfast. *James Laffin & Co., Railway-st., Lisburn. £3,740.

Orrell.—Laying approx. 1,400 yds. of 8-in. water mains, hydrants, valves, etc., Gathurst-rd., for U.D.C. A. W. Charity, S. *Rigby Bros., Bank Colliery, Billinge, nr. Wigan.

St. Marylebone.—For shelters in the borough the B.C. have accepted the following tenders :—C. Tavener & Son, 112, Finchley-rd., N.W.3, £1,084; Frank Batty & Smith, Ltd., 18, Spring-st., W.2, £238; Kimber & James, Ltd., 23, George-st., W.1, £280; General Building Co., 100, St. Martin's-lane, W.C.2, £284 10s; John Lewis Building, Ltd., 33, Phœnix-yd., W.1, £188 10.; W. R. Willcocks & Co., Ltd., 45-47, George-st., W.1, £219 16s.; Chas. F. Palmer & Co., Ltd., 70, Margaret-st., W.1, £187 7s. 10d.; H. Meckhonik, Ltd., 44, Upper Berkeley-st., W.1, £132 16s. 1d.; Rodec, Ltd., 106, George-st., W.1, £118 11s. 6d.; J. H. St. John & Sons, 23-25, Castlereagh-st., W.1, £63 15s.; George Powell, 37, Marylebone High-st., W.1, £66 15s. 6d.; H. W. Wensell, Ltd., 51, Paddington-st., W.1, £216; J. Disson & Sons, Ltd., 18, Woronzow-rd., N.W.8, £105; Borgars, Ltd., 7, New Cavendish-st., W.1, £113 11s. 7d.; J. H. & W. Heal, Ltd., 40-42, Parkway, N.W.1, £163; Borgars, Ltd., £148 17s. 2d.; J. H. St. John & Sons, £86; W. R. Willcocks & Co., Ltd., £36; Oakdale Building Co., Chase-side, N.14, £276 4s. 6d.; J. H. St. John & Sons, £89 15s; Rodec, Ltd., £88 12s. 9d.

Sittingbourne and Milton.—For alterations and additions at Chalkwell-rd garage, for T.C. :—

T. Monk & Sons	£327
E. Wraight, Ltd.	317
R. High & Sons	256
C. L. Taylor & Son	252
*E. Bishop & Sons, Ltd.	248

Tipton.—Works for E.C. :—(a) Distempering interiors of shelters at various schools, and (b) levelling, etc., of approx. 2,000 yds. of tarmacadam paving to school playgrounds. Charles R. Gallie, A.R.I.B.A., architect :—(a) *J. Caddick, Son and T. E. Yates, Ltd., Alexandra-st., Wolverhampton; (b) *Asphalte and Public Works, Ltd., Congreve-st., Birmingham, 3.

Truro.—External painting of (a) 52 houses, (b) 50 houses, (c) 62 houses. F. A. Barnes, S.

*W. J. Tipper & Son, Castle Lodge (a) and (b)	£387 4
*F. J. Arthur & Son, 10, Kenwyn-st. (c)	206 10

West Riding.—(a) Painting work at Cononley council school; (b) Eastburn council school; (c) electrical work; and (d) improvement of heating system at Steeton council schools; (e) folding partition, Sutton council school; (f) internal and external renovations at Greenfield council school, for E.C. *(a) H. Lee, Cononley, Keighley; *(b) E. Chatterton, Crosshills, nr. Keighley; *(c) Beaumont & Blackburn, Ltd., 30, Church-st., Dewsbury; *(d) G. H. Mason & Sons, 54, High-st., Skipton; *(e) Emmott & Bradley, Keighley-rd., Cowling, nr. Keighley; *(f) Rowland & Shaw, Arthurs Greenfield, Saddleworth, nr. Oldham.

Wolverhampton.—Additions to factory, for H. Meadows, Ltd. Jackson & Edmonds, FF.R.I.B.A., 24, Bennetts Hill, Birmingham, architects. *McKeand, Smith & Co., Ltd., Showell-rd.

Woolwich.—Works for B.C. :—Concrete floor, etc., at decontamination centre—

Frazzi, Ltd.	£327 4 8
The Kleine Co., Ltd.	320 9 4
*F. Bradford and Co., Ltd. ...	248 4 9

Demolition of 3 to 13, Rodney-st.; 1 to 6 and 8 to 11, Collingwood-pl.; 54 to 56a, Woolwich High-st. (Council to pay)—

W. J. Gorst and Co.	£330 0
E. W. Spears and Co.	155 0
A. Penfold and Sons, Ltd. ...	150 0
W. H. Penfold and Sons ...	47 0
*C. Griffiths, Ltd.	38 15

Emergency work at power station—

Silicate Paint Co. (not to Council's specification) ...	£294 3 4
Souwestone Restoration Co., Ltd.	445 8 4
Palmer's Travelling Crane and Scaffold Co., Ltd.	400 6 3
*London's Spray and Brush Painting Co., Ltd.	390 0 0

Heating and hot water installation at additional storey at decontamination centre—

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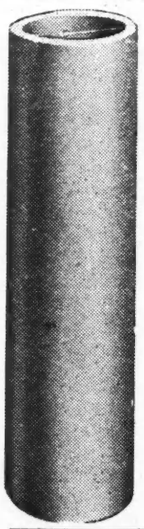

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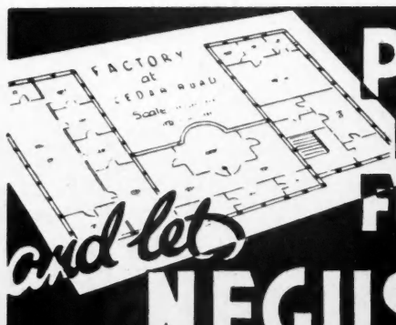

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